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OVERSIGHT OF AVIATION SAFETY

HEARINGS

BEFORE THE

SUBCOMMITTEE ON AVIATION

OF THE

COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

ONE HUNDREDTH CONGRESS

FIRST SESSION

ON

OVERSIGHT OF AVIATION SAFETY

JANUARY 29 AND 30, 1987

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OVERSIGHT OF AVIATION SAFETY

THURSDAY, JANUARY 29, 1987

U.S. Senate,
Committee on Commerce, Science, and Transportation,
Subcommittee on Aviation,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:30 a.m. in Room SR-253, Russell Senate Office Building, Hon. Wendell K. Ford (Chairman of the subcommittee) presiding.

Staff members assigned to these hearings: Steve Palmer, professional staff member and Patty Hahn, minority professional staff member.

OPENING STATEMENT BY SENATOR FORD

Senator Ford. Good morning, ladies and gentlemen.

Today, the Aviation Committee takes its first steps into the 100th Congress and it is fitting that our first venture is the oversight of safety.

With the increasing frequency of mid-air collisions and near-misses, the public has every right to hear what is being done by the Federal Aviation Administration and the aviation community to ensure when they fly, they will reach their destination without incident.

This Subcommittee has held a number of safety-related hearings in recent years, the last being on the need for an independent commission to review aviation safety, an idea proposed by the Senate Majority Leader.

While I am new at being Chairman of this Subcommittee, I am not new at being a user of both commercial and general aviation. I have seen first-hand the changes that airline deregulation and the problems with the air traffic control system have meant to air travelers. Some have benefited, while others have lost out. While I believe the system generally remains safe, it has suffered in recent years.

Now, as I enter into this new position, I want to know whether the margin of aviation safety has in any way been reduced. It is my hope that through these hearings we can begin to build a base of knowledge on what is needed to improve safety in our Nation's air transportation system.

For example, we are currently in the middle of a 10-year $16 billion program to modernize the air traffic control system. After 4 years, it has fallen somewhat behind. Has that delay affected safety?

The FAA has consistently argued for the last several years that it has enough air traffic controllers and safety inspectors. However, with the delays in the National Airspace System Plan, how can we be sure that we have adequate staffing to meet today's record demand on the system, much less what is projected for the next 5 years.

Other questions which must be addressed. They are as follows: Is the FAA proceeding as quickly as possible toward the implementation of an air borne collision avoidance system? Are there alternatives that could better serve our needs? Can the air traffic control system adequately ensure safety while attempting to meet the demands of a commercial industry committed to putting more aircraft in the air? How will the FAA proposals to restructure the air space around our major airports affect the general aviation industry?

These are important matters, for while we must ensure safety, we must also strive to provide an appropriate balance of safety with the right for access to the air ways.

I look forward to hearing from our witnesses today and tomorrow, Lord willing and the snow doesn't get too deep. I also look forward to working with each of them, as well as our Ranking Member, Senator Kassebaum, and the other Members of the Subcommittee as we attempt to address the many issues ahead of us in this coming year.

We are very pleased to have with this morning the Chairman of the Commerce Committee, the distinguished Senator from South Carolina, Senator Hollings.

Senator Hollings, if you have any statement to make, I would like for you to do that at this time.

OPENING STATEMENT BY THE CHAIRMAN

The CHAIRMAN. Thank you, Mr. Chairman.

Mr. Chairman, as you well know, this subcommittee held aviation safety hearings last July before approving Senator Byrd's Aviation Safety Commission Act. Since that time, however, there have been three more mid-air collisions involving passenger aircraft over the cities of Cerritos, California, Salt Lake City, Utah and most recently, Kansas City, Missouri.

The fact that none of these tragedies involved a major U.S. airliner should not diminish our concern, for there are danger signs which we in government clearly must heed. I point specifically to the continuing rise in the number of near mid-air collisions, or near-misses, as well as runway mishaps. A record 828 near mid-air collisions were reported last year by the Federal Aviation Administration. Of the 671 fully investigated, 141 were classified as "critical," meaning planes cane within 100 feet of each other. We can only thank the good Lord that none of those 141 incidents resulted in a catastrophe.

Nor should we take a great deal of comfort in the fact that statistics show air travel to be the safest of any mode of transportation. In addition to the increasing number of near-misses, the public is inundated with stories concerning shoddy maintenance records, inspection fines, and overworked air traffic controllers. It is our duty as their legislators to get to the bottom of these stories and determine whether the margin for safety in the U.S. airline industry is up to the standard that the traveling public deserves.

This hearing will explore several key problem areas manifested by recent problems in the air traffic control and safety inspection programs. In particular, I want to know why the air traffic controller force has not yet recovered from the mass firing following the 1981 PATCO strike; whether airspace restrictions around the nation's 23 busiest airports should be expanded and what effect that will have on the industry; whether safety inspector staffing levels are sufficient; and the status of the Traffic Alert and Collision Avoidance system being developed by the FAA.

The U.S. passenger airline industry has experienced many significant changes during this era of deregulation. Many of these changes have been for the better, most particularly the lower fares which have allowed a greater number of Americans the economic freedom to travel to distant points within this great nation. But at a time when we are expecting air traffic to continue growing in volume, it concerns me greatly that our air traffic control system may already be overburdened. Now is the right time for us to take a close look at the effects of deregulation on safety, where we are heading, and how we can enhance safe air travel without sacrificing deregulation's benefits.

I want to thank our Aviation Subcommittee Chairman, Senator Ford, as well as the other members of the Subcommittee for their support in scheduling these hearings. Aviation safety is paramount as a public issue and demands continual oversight. These hearings should assist us in fulfilling this task.

Mr. Engen, I will be looking to the FAA and asking why you don't go ahead and move on these congested airports with respect to the scheduling of all the flights during the convenient hours. I notice by the morning's press that the Secretary of Transportation, Secretary Dole, is asking the airlines to sit down and get together. Well, that sounds sweet and nice.

They did that in 1984, and then it broke down. You have the authority, and in fact more than that, you have the responsibility, and responsibility, for safety is paramount. It seems to me that you are passing the ball off to somebody else. We are looking at this. Washington gets a great deal of vibes out of "I am concerned." The heck with that nonsense.

We have to make certain that flying is absolutely safe. I think you can do it and should be doing it. For example, I think with respect to the controllers, we are moving too slowly.

We had some 16,100 controllers prior to the strike in 1981. There is far more congestion and danger up there, and we are only up to 14,800. I guess we will get to 15,000, like we appropriated for, but why not move forward with additional controllers, and more experienced ones?

I think that these two things are very, very necessary. Another little good thing is to get together and see whether you can stop the delays and so forth. However, I am more interested at the moment in safety rather than inconvenience.

Mr. Chairman, another matter has to do with these transponders. There is no reason to wait until 1989. We all fly, in the

Senate here and otherwise, in small planes. We certainly wouldn't want to fly one that could not be identified. It just strikes me that to do so, would be unsafe.

Thank you, Mr. Chairman.

Senator Ford: Thank you, Senator Hollings.

Senator Exon?

OPENING STATEMENT BY SENATOR EXON

Senator Exon. Mr. Chairman, I am pleased to see you starting out the new year with these safety hearings. I think there is nothing more important than improving safety.

I happen to feel that we have the best system in the whole world with regard to collision avoidance, but it is still wanting. We have to improve it and I believe that the Administrator will agree with that. I want to find out how we are going to do that. I also will be directing some of my questions to what and how are we going to use the billions of dollars that we have piled up in the Trust Fund which should be used for that purpose.

I was also interested, Mr. Chairman, in your opening remarks with regard to on-board collision avoidance system. Mr. Engen knows full well my position on this as there has been 10 or 12 years of controversy on this. In fact, one of the most dedicated bureaucrats in the FAA lost his job over the fact that he stood up and shouted very loudly and very clearly that because of the bureaucracy in the FAA, we were not moving as rapidly as we could or should.

Therefore, I think this is a critically important hearing and I am looking forward to the testimony. I will have some questions when it becomes my turn.

Senator Ford. Senator Danforth.

OPENING STATEMENT BY SENATOR DANFORTH

Senator Danforth. Mr. Chairman, thank you, very much. I think this is clearly an important subject and a very timely hearing. It seems to me for some time that our air transportation system is overloaded. Deregulation has been a boon to a lot of people who have been able to travel at a reasonable cost. However, it is clear to anyone who has traveled that, the system is now overloaded. The system which was constructed and manned in earlier days is not up to the pressure that has now been placed on it.

It seems to me that some obvious improvements that should be made would include using at least a portion of the $4.5 billion surplus that is now in the Aviation Trust Fund to improve capacity at our airports, our existing airports and to improve reliever airports, and also to bring on board additional personnel for the FAA.

My own view also would be that—this is not exactly a safety question, I guess—but with respect to the traveling public and its convenience, there should be some mechanism to inform the public about the likelihood of airline delays. Clearly, if 10 or 15 or 20 airplanes are all scheduled to leave the same airport at the same minute, not everyone is going to be leaving at the same minute.

It would seem that it would serve the purpose of an informed public if there were some mechanism which would require a disclosure of potential delays.

So, again, Mr. Chairman, thank you very much. I think this is a very timely hearing.

Senator FORD. Thank you, Senator Danforth.

Senator Kasten is not new to the Commerce Committee, but he is new to the Aviation Subcommittee. So we welcome you today, Bob. Do you have any statement? We would be delighted to hear you now.

OPENING STATEMENT BY SENATOR KASTEN

Senator KASTEN. Thank you, Mr. Chairman. I am pleased to have the opportunity to serve on this Subcommittee, and I am particularly pleased that you have called this hearing today on air transportation safety.

We have been fortunate to have dramatically improved our domestic aviation record over the past year. In my view, though, we were just plain lucky that 1986 wasn't a repeat of 1985.

If the FAA simply rests on its laurels now, rests on last year's safety record, the nightmare of 1985 will visit us, again; you can count on it.

No deaths were recorded on domestic carriers last year, but we are living in a dreamworld if we think all of our problems have been solved. Although statistics point out that 1986 was one of the safest years, the public remains skeptical. You can look at the cover of the recent Time Magazine, for example, "Air Traffic: How Safe Is It?"

A number of concerns are being expressed across this country. How safe is it? On paper it is safer today than it was two short years ago. However, the level of air traffic controllers and safety inspectors remain inadequate. We are still flirting with potential disaster.

Mr. Chairman, even if the FAA follows through on the Congressional directive to increase the number of full performance air traffic controllers, that number will be below 11,000 by this October. Before the 1981 strike, we were over 13,000. With the increased air traffic, 11,000 controllers simply will not be enough.

Certainly I commend Secretary Dole and Admiral Engen for taking our Congressional directives to heart in a concerted effort to improve the margins of safety. But it is clear that these efforts must continue beyond just this calendar year, and into a long-term commitment to better air safety.

I am pleased that a number of our colleagues today have talked about utilizing the Trust Fund. That is something that a number of us have worked on in past years. I know that Senator Exon has been interested in that, also.

I think we have to deal with the long-term commitment to better air safety and part of that is going to include the Trust Fund dollars.

I thank you, Mr. Chairman, for calling this important and timely hearing and will look forward to working with you on this Subcommittee.

Senator FORD. Thank you, Senator Kasten.

Senator McCain, we are delighted to have you, not only as a new Member of the Commerce Committee, but a new Member to this Subcommittee, and we look forward to your imput and look forward to working with you.

If you have any statement at this time, we would welcome it.

Senator MCCAIN. Thank you, Mr. Chairman.

Senator FORD. We like those kind of statements.

Another new Senator who is here, interested in this hearing, Senator Wilson, California. Senator.

OPENING STATEMENT BY SENATOR WILSON

Senator WILSON. Mr. Chairman, I am pleased to join the Subcommittee this morning—the Subcommittee's first hearing in the 100th Congress dealing with the complex and emotional issue of aviation safety. I want to thank you for holding this set of hearings today and tomorrow, and I hope that the testimony received by the Subcommittee will help the Congress formulate timely and responsible legislation to reauthorize the regulatory and taxing authorities of the Federal Aviation Administration.

Although I am a new Member of the Committee on Commerce, Science and Transportation, I am no stranger to the subject of aviation safety. As many of you know, I was Mayor of San Diego in September, 1978, when PSA Flight 182 collided with a private plane over a residential neighborhood, resulting in 144 deaths. Without a doubt, it was the worst day of my tenure as Mayor. After examining the wreckage, meeting with my fellow San Diegans affected by the crash, and working with federal officials, I testified the next year before the House Subcommittee on Aviation. I asked that the federal government proceed more quickly in implementing new and stronger regulations governing our air traffic control system.

Unfortunately, August's tragic mid-air collision of an AeroMexico airliner and a private plane above Cerritos, CA, and the even more recent tragedy above Salt Lake City, UT, are in great part the result of an air traffic control system whose margins of safety are growing increasingly thin, although not necessarily due to Congressional inaction.

On December 5, 1986, I held a special hearing in Los Angeles on the subject of aviation safety in general and safety in the skies above Los Angeles in particular. As you know, Mr. Chairman, I have distributed copies of the official record to all Members of the Commerce Committee. Included in the record is a series of recommendations formulated by the Los Angeles County Board of Supervisors designed to make our air traffic control system more responsive to the ever-increasing amount of traffic in the skies above Los Angeles. Since that hearing, I have come to a number of conclusions which I hope the Committee will consider during discussions on a meaningful and coherent FAA reauthorization plan during the First Session of the 99th Congress. They are as follows:

(1) That altitude encoding transponders (Mode C) should be required in all aircraft;

(2) That Terminal Control Areas (TCAs) be made as uniform as possible, and that no exceptions should be made for smaller commuter airports which lie within the boundaries of larger commercial aviation airports;

(3) That the FAA's formula for determining whether a local general aviation airport merits a control tower be re-examined on the basis of its location vis-a-vis major airports and the amount of traffic at those airports;

(4) That the Congress give specific direction to the FAA regarding the development of threat collision avoidance systems (TCAS), and the relative merits of TCAS II versus TCAS III; and

(5) That the Aviation Trust Fund be taken off-budget.

Given the complexity and importance of the issues surrounding any FAA reauthorization, the process this Subcommittee undertakes will no doubt be a long and difficult one. For the most part, deregulation of the airline industry has been a boon to the consumer. However, there are over four times as many air carriers operating now as in 1978, and the number of passengers flying on U.S. airlines has jumped over 50% since that time. Our air traffic system is being strained, and although it is safer to fly on commercial airlines now than ever before, statistics demonstrating this fact are of no consolation to those in California, Utah, and the rest of the nation who have lost relatives and friends in aviation accidents.

In summary, Mr. Chairman, I believe that a legislative agreement between private interest groups representing aircraft manufacturers, owners and pilots at all levels, the FAA, and the Congress is possible in 1987. I look forward to working with Members of the Subcommittee on Aviation in an effort to reauthorize the FAA's regulatory and taxing powers in a timely and responsible fashion.

Senator Ford. Senator Gore.

OPENING STATEMENT BY SENATOR GORE

Senator Gore. Thank you, Mr. Chairman. Thank you for your courtesy in allowing me to participate today as a Member of the Full Committee, but not a Member of this Subcommittee. I am grateful to you. We have worked together in the past, particularly on the Arrow Air problems followng the tragedy at Fort Campbell on the border between our two States, and I have worked with others on this Subcommittee on matters such as wind shear problems.

Mr. Chairman, I want to thank you and Chairman Hollings for your timely scheduling of these hearings. It is fitting that the first hearings of this Committee in the 100th Congress focus on three of our vital national commitments: international competitiveness, the civilian space program, and aviation safety.

It is unfortunate that it takes a major aviation accident to stimulate government actions to improve air safety. San Diego, Chicago, Gander, Cerritos—the tragic accidents have triggered major steps by the government to do a better job in regulating air safety.

First, I want to commend Admiral Engen and Chairman Burnett on the exceptional job they are doing to respond to the ongoing

Congressional interest in air safety. The NTSB is, in my opinion, one of the real success stories for our government—theirs is a tough, grim job, and they do it in a quiet, no-nonsense, professional manner.

And, while we have had our differences, I have maintained high respect for Admiral Engen's leadership at the FAA. Over the past six years I have been active in air safety oversight, as chairman of the House Science and Technology Investigations and Oversight Subcommittee, and as a member of the Government Affairs Permanent Subcommittee on Investigations Subcommittee, and the Commerce Committee. We have looked at critical problems in our civil aviation system, and the FAA has, for the most part, worked diligently to resolve those problems.

Several years ago we held extensive hearings on the inability of airports to obtain trust fund money for runway friction testers. The FAA responded with rules to allow ADAP funds for that purpose.

Then, after hearings on the Air Canada fire, the FAA produced new rules on the toxicity and flammability of aircraft cabin materials. Following our hearings on windshear after the Delta crash in Texas, the FAA moved to upgrade its attention to weather problems around airports, and began a program to purchase terminal area doppler windshear detection equipment for those facilities especially susceptible to that dangerous phenomenon.

After the Arrow Air charter crash at Gander, New Foundland, last year, it became clear that there was a breakdown of federal regulatory responsibility in several areas. Many non-schedule charter companies were operating dangerously deficient aircraft with overworked pilots and woefully inadequate maintenance routines. We found that FAA inspection was lax, and Defense Department oversight was almost non-existent. In the Arrow Air crash, 256 servicemen and a flight crew died because of that breakdown.

I introduced a bill last year to address the most critical flaws in the regulatory procedures governing these charter services. And, in the aftermath of numerous hearings focusing on the Gander crash, the FAA moved to improve its liason with the Military Airlift Command, and increased scheduled inspections, as called for in the bill. For those responses, the FAA is to be commended.

I do not want to suggest that the FAA only acted because we held hearings—that is not the case. But it has been clear that the FAA has been responsible in its acceptance of constructive criticism and oversight. And I know Admiral Engen has not always had an easy time bucking the regulatory reform ideologues at OMB in implementing sound new safety initiatives, but I am pleased that he keeps trying. We will help him as much as possible in that effort.

Yet for all the good work being done at the FAA, there are still a number of unresolved questions about FAA policies and even the fundamental structure and mission of the agency.

One very serious and growing problem where quite frankly FAA has let the ball drop is air ambulance safety. The use of helicopters to transport gravely ill patients is becoming increasingly common. While many lives have been saved through the often heroic efforts of these programs, the number of lives lost in accidents is indeed alarming.

On December 3, 1986, an emergency medical helicopter crashed shortly after takeoff on route from Jamestown to Nashville, Tennessee. The pilot, two nurses, and the patient were all killed. The accident insured that for the second straight year the fatal accident rate would be a stinging 6 per 100,000 flight hours. This rate is more than double the rate for commerical helicopters in general, and 1500 times higher than the rate for commercial airlines.

FAA has exacerbated the problem by neglecting to recognize the unique demands placed on both pilot and aircraft by emergency medical helicopter transport, and failing to respond by establishing appropriate data gathering and standard setting.

There is still much work to be done in the area of FAA inspection procedures and personnel policies. It is absolutely critical to the effectiveness of FAA inspections that the agency's personnel maintain a completely arms-length relationship with the businesses they are supposed to regularly inspect. Yet, it is too easy for FAA inspectors to be caught up in a revolving door mentality—that is, consciously or unconsciously providing preferential treatment to private businesses they may want to go to work for at some point. we need to shut that revolving door now, to preserve the integrity of the FAA's inspection operations.

Arrow was documented as one of the worst commercial aviation operations in the country prior to the Gander crash, yet the company was allowed to not only continue charter operations, but carry U.S. military personnel while problems went uncorrected.

How could the federal agency charged with the safety of aviation have allowed Arrow to continue to operate under such dangerous conditions? After all, is not safety the FAA's preeminent concern?

The fact is, the FAA has conflicting missions—on the one hand it is charged with the responsibility for regulating all civil aviation operations, including safety. On the other hand, it serves to promote the economic well-being of the companies it is supposed to regulate. It does not make sense to house those conflicting missions under the same roof. I believe it is time we look at this fundamental flaw in the structure of the FAA. One obvious solution would be to vest the regulatory functions for safety within the NTSB, the operations functions within the FAA. But that is only one possibility—there may be others and it is time we study them in detail.

Mr. Chairman, I look forward to the testimony of our witnesses today, and will have a few questions for them as we continue. Thank you.

Senator FORD. Let me try to set the ground rules here this morning, since this is my first hearing. With three witnesses today, I don't think I will put a limit on their statements; however, I will put a limit of about 10 minutes, if that is all right, for each Senator. If they are not finished, we will come around again. We will try that and then if need be, do something else.

Admiral, we welcome you today, and we are very pleased that you are here. When you start, if you would introduce the gentlemen that you have with you, we would appreciate it.

Let me ask you, if you would do one thing prior to your opening statement, if you would elaborate a little bit on the intent of Secretary Dole's release yesterday, as it relates to the airlines and the FAA and what generally she expects.

With that, we welcome you today and look forward to your testimony.

STATEMENT OF HON. DONALD D. ENGEN, ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION, ACCOMPANIED BY ANTHONY J. BRODERICK, ASSOCIATE ADMINISTRATOR FOR FLIGHT STANDARDS; KEITH POTTS, ASSOCIATE ADMINISTRATOR FOR AIR TRAFFIC; AND WILLIAM HENDRICKS, DIRECTOR OF AVIATION SAFETY

Mr. ENGEN. Thank you, very much, Mr. Chairman. It is a great pleasure to be here. I have, on my right, Mr. Anthony J. Broderick, Associate Administrator for Flight Standards, and two new members of my team, on my left, Mr. Keith Potts, Associate Administrator for Air Traffic, and on my far left, Mr. Bill Hendricks, who is the Director of Aviation Safety. I wanted them to come along today and meet you fine gentlemen and be able to participate. I anticipate that I will take the brunt of all the dialogue, and answer to the best of my ability.

I furnished a statement for the record, and I would just make some very brief comments. I will try to hit on the point that you just raised, Mr. Chairman.

Safety record in 1986 was indeed good, as Mr. Kasten said. I think we can all take pride in that year, but there are some things we need to watch as we go along.

Last year, in 1986, the major airlines flew more than 7 million flights and they did not have any major accidents. In the last 16 months, over half a billion people have flown in our air space. The major airlines had the lowest accident rate in six years, last year, and if you took the four previous years and added them to 1986, we would end up with the safest five-year period in aviation history.

Commuter airlines had four fatalities, the most on record, and there was a mid-air collision last week, near Salt Lake City. That mid-air collision doesn't mean that aviation isn't safe or has gone critical, but it does mean that we still have work to do. I face that responsibility.

General aviation had one of its best years last year and it is continuing to show improvement. But you have to look at the trends. You have to be sure that you don't look at any one year, but you look at a group of years.

1986 was indeed an improving year and a good year, but now we have to look forward to 1987, and I am here before you to say that I will leave no stone unturned to try to improve what we have done in 1986 in 1987.

Last year we revamped our airline inspection process and we increased the numbers of inspectors that we have. We find that we are getting better compliance from the aviation system on the part of the airline operators out there. As we do our inspections today, we find that they are more compliant with the Federal air regulations than they may have been five, six or seven years ago. And that is heartening to see that the industry is improving.

It is human to want to take credit for a good year like that, but let me say that safety is indeed a shared responsibility. It belongs to the users and to the enforcers, if you will. One can't work without the other.

Airline pilots, general aviation pilots, commuter pilots and air traffic controllers make that safety record out there. It is not the FAA; it is the people who use the system. I stand holding the responsibility to make that system respond as it should. But one can't work without the other.

That good safety record we had is certainly no accident. It takes a lot of effort on the part of everybody, as I just said. Over the years, we have developed a method to bring together the Federal operators, if you will, with the system with the private system users. More than that, our system allows us to safely and efficiently satisfy the needs for our National Defense.

But challenges do remain and we must continually try to get better.

The air traffic system we have works. It is generally conceded throughout the world that ours is the very best. There are qualitative and quantitative benchmarks to support this. Other nations who have separate air traffic systems, military and civil, are looking at ours increasingly with a friendly eye to try to make their system like ours.

With this as a background, I really am kind of surprised to hear a trade association representing the airlines wanting to split off air traffic operations from the FAA and make it a government corporation. We have an ongoing program to make the National Airspace System more capable. We have had some technical delays, as you noted in your opening statements, but we have a Trust Fund to buy the equipment and we are using that Trust Fund. It may be that you fine gentlemen don't feel that we are using it fast enough, but we are dedicated to using that Trust Fund, and it is paying for the upgrade of our National Airspace System. And we do have a plan to meet our goals, to do this upgrade.

The point I would like to leave with you is that we are continuing to improve. There are still things that need to be done. We do need to continue our training. We do need to be sure that we hire additional inspectors and additional air traffic controllers. We have procedures that need to be improved, and we need always to keep bringing on board newer and better equipment.

Delays are a commercial aviation vexing problem. I think people have tended to think of delays as an indication that the system is not functioning as it should. These delays are not new. We have had delays every decade since the 1920's, and you find people have addressed them in the decades previous to this.

It seems to be handy for those who are pundits in the public sector, and criticizing the FAA, to point to the FAA as being the reason why we have air traffic system delays. I want to assume our responsibilities, and the air traffic system is responsible for the through-put of traffic in air commerce. I accept that.

But we must remember that in addition to that there is weather; it is a combination of many things—weather, airport construction, ground constraints, community noise-related constraints are having an impact upon delays, and airline performance, including overscheduling and unplanned maintenance needs on airplanes as they move about through this system.

The FAA has a program to deal with the delays in the system and we are working day and night trying to finely tune and renew the system. We are making good effort, but I wish the others would contribute to solutions, as well. The airlines continue to over-schedule, and just yesterday Secretary Dole brought this to our attention by saying that she was going to cause to be reviewed the delay situation at 13 individual, major air carrier-airports throughout these United States.

I believe we are going to see that the airlines will begin to improve after we look at what is causing the delays out there.

Local communities are slow to build the needed airports and runways, and true, it is the FAA's stated goal to provide money, and we have had over a billion dollars this past year and we will have in the years ahead, for airport improvement. We want to get that out where it will do the most good, but communities need to do this with us. Communities need to understand the importance of that port of commerce, that airport, what it means to their community.

Community noise-related reasons seem to stop expansion and they constrain our schedules. I think noise is probably one of the most pervasive irritants in the United States today. People are very conscious of that noise and it has an impact on our scheduling.

We need the airlines and the communities to develop their own programs to help reduce these delays and lessen the airport load, and I assure you, Mr. Chairman, that I stand here ready to lead the charge and to do everything that is humanly possible to ensure that we work to reduce the delays.

That completes my statement, sir, and I would be very happy to respond to any questions.

Senator FORD. Thank you, very much, Admiral.

I think I will insert in the record, Admiral, if I am wrong you might want to correct me, but there are 13 airports that are proposed by the Secretary's Order, and those airports are, as I have them, Atlanta, Boston, Chicago/O'Hare, Denver, Minneapolis-St. Paul, La Guardia, JFK, Newark, St. Louis, San Francisco, Dallas-Fort Worth, Philadelphia and Washington-Dulles.

Mr. ENGEN. That is correct, sir.

Senator FORD. Using the procedure we have used in the past, the first-come, first chance to ask questions—I am going to yield to two of my colleagues since they have another meeting to go to. Senator Hollings, if you want to proceed, you may go ahead, and then we will take Senator Exon.

The CHAIRMAN. Thank you very much, Mr. Chairman. I will be brief. I am leaning somewhat differently. I think we have had a good commercial airline safety record, but there is a crisis that your comments do not emphasize. In other words, last year we had some 828 near mid-air collisions. I understand you investigated 671 of those and found 141 critical, that is, within 100 feet.

We just see it all around us. I mean, you have seen Time magazine, and all the other particular articles coming out. We have seen a lot of the shoddy workmanship, the maintenance records and the overworked air traffic controllers. So we really have a problem, and this is a "good government award session." This is one to find out just what the Government intends to do with respect to actually getting in there and assuming its responsibility.

I want to resist the idea that we can take care of it all out of the Airways and Airport Trust Fund. Now we build up billions there. We were rather lethargic in spending for airport and airways modernization. It was not to be used for operational expenses. We broke that in 1982, momentarily, and we have used about 27 percent. But I would hope that we could get back into using that as it was fully intended.

Somebody is going to respond that the budget constraints of the Gramm-Rudman-Hollings requires generating revenues. We have to pay our way and maintain the trust of the Trust Fund. Is that your view? I just want to get your feeling about that Airport and Airways Trust Fund, so that we don't just go merrily along and just spend it for operational expense.

Mr. ENGEN. Senator, it is my goal to use the Aviation Trust Fund for what it was intended, which is to improve the National Airspace System plan.

The CHAIRMAN. Very good, sir. Now with respect to these highly congested airports—why sit down and have a bunch of corporate folks get together. We tried that once before in 1984, and it has gotten worse hasn't it?

Mr. ENGEN. In 1984, Mr. Chairman, we met with the airlines, and in 1985, we saw a graphic improvement in the delay situation. It was almost as if raising a shade. That improvement was solely due to the de-peaking of hours of the day at individual key airports. It was singularly effective.

Since that time, if you look at the Airline Operating Guide, you will find the airlines have begun to bunch their schedules, again. There are airports out there that have the capability to handle—I am going to take a hypothetical case now but I can give specifics—of let's say 79 airplanes in a given hour.

We find at some specific airports in a 15-minute segment, 34 or 40 airplanes are scheduled. It is just not physically possible for those airplanes to get from the gate and take off. When they flush the hub concept, and when they flush those airplanes from the terminal, they all line up in line, maybe 17, 18, 20 deep, to take off.

So what we can do, and what the Secretary is trying to do is to draw to the attention of the airlines that they have a very big part, as a user, in this delay process. I don't want to shirk my responsibility one iota, and I am doing everything I can to put down high-speed turnoffs and additional runways, additional ILS's to improve this, and will continue to do that. But the big gains will come in scheduling.

The CHAIRMAN. Why can't we just go ahead as a matter of directive now and say, "here is what the airlines themselves have worked out". There is a punitive nature to it. It has worked very well, and then authorize that, or require it, I should say, for the rest of these hub facilities.

Mr. ENGEN. Mr. Chairman, I find in the deregulated environment, which has brought great change to our aviation system and brought opportunities to our people to travel cheaper in many areas——

The CHAIRMAN. But, Admiral, we are not deregulating safety.

Mr. ENGEN. No, sir.

The CHAIRMAN. I can tell you, it is not cheaper. You don't want to get me to start testifying.

Mr. ENGEN. Please don't read anything that I am saying that would get me away from safety. My primary role is to guarantee the safety of this system. I was trying to answer the question with respect to why you don't go back in and tell the airlines—change your schedules. The airlines, themselves, feel very protective of those times, themselves, and they say that that is re-regulation, and that is beyond my authority, sir.

If I can get them to cooperatively do this, I believe that is the way to go, sir.

The CHAIRMAN. You have ultimate authority for safety; don't you feel that?

Mr. ENGEN. Oh, yes, sir. I do.

The CHAIRMAN. That would not be re-regulating. That would be regulating safety, which is a basic responsibility. That ought to be understood.

Mr. ENGEN. May I say, sir, on a daily basis I do that. Through central flow control, we literally control like a faucet, if you will, on the Nation's air flow, the hourly flow of airplanes, and we do that on an hourly basis.

Senator FORD. Thank you, Senator Hollings.

Senator Exon.

Senator EXON. Mr. Chairman, thank you, very much. Admiral, we appreciate very much the fact that you are here today.

You say the right things and I think you are trying to do the right things. I think the object of this Committee is to try to help you in that effort.

Let me get to some things that I am very much concerned about. In the reauthorization process this year, we are going to be addressing the Trust Fund. Once again, this Administration, like previous administrations, are not using the billions of dollars—some $8 billion—in the Aviation Trust Fund. It is carried over from year to year and not spent as it was intended when that particular measure was incorporated in the law.

Just so that all is understood, there is a tax on tickets and a tax on certain aviation fuels that goes into a Trust Fund. This Trust Fund is supposedly to be used by the Administration, and authorized by the Congress to carry on the important matters of our airports, including construction, and safety.

I don't believe that you want to defend the use by this Administration and previous ones of piling that money up there and not employing it as it was envisioned simply, and for no other reason, than it makes the horrible deficit look better.

Would you, as the FAA Administrator, prefer that all of this money be obligated and used every year and get away from letting it accumulate?

Mr. ENGEN. Senator Exon, I don't believe in stacking up and not expending the monies to improve the system. The Administration will send forward this week, I believe, our reauthorization package. Without pre-empting that effort, let me say to you, sir, that the reauthorization package that the Administration will send forward will have that goal in mind, to use the Aviation Trust Fund.

I would put one word of caution there; I would not like to have a yearly requirement to expend the monies by each year. I would like to have the flexibility over whatever period the reauthorization is for to expend those monies. But I am dedicated, as Administrator of the FAA, sir, to expend those monies in the improvement of the system.

Senator EXON. I don't know what is so secret about it, or why we have to hold it in suspense. Are you testifying today that the request from the Administration that will be coming up here essentially will use up all of the present surplus that we now have in the Trust Fund?

Mr. ENGEN. The authorization is designed to expend at a rate, Senator, that will get us the equipment we need. It won't use it up in two years' time, such as that, but the reauthorization package that we will send forward will expend at a rate which allows us to wisely use the money. It is in excess of what we asked for in 1987.

Senator EXON. If the formula that you just outlined is followed, it seems to me that we will be spending more than we have in the past, but the surplus in the fund will continue to rise. Is that right?

Mr. ENGEN. No, sir. It isn't. If you look at our 1988 budget request, it is a reflection of the reauthorization that we will send forward.

Senator EXON. My question, again, Mr. Engen, is whether or not the request that you are going to send up here as approved by the Administration is designed and will it bring down the terribly excessive amount in the Trust Fund that we have allowed to pile up there, year after year?

Mr. ENGEN. It is designed to bring that down, yes, sir. But I can't talk about it in great detail because it will be sent later this week, I believe.

Senator EXON. Would you endorse a possible move by the Congress to tie in the expenditure of those Trust Funds over a period of years, or reduce those taxes by up to 50 percent or more, if they aren't being used? This option would allow the individual airports around the country to collect the taxes that now comprise the Trust Fund and make proper use of them?

Mr. ENGEN. Senator, the penalty clauses that have we had in the past have tended to drive Congress and administrations, past and present, apart. I think penalty clauses, while devised to ensure that the monies are expended wisely, are more of a fix on a reauthorization. I believe that the reauthorization should state what the expenditure rate will be and I believe that we should decrease the taxation that we have. I believe that we should not increase the taxation that we have had.

I believe it is adequate as currently structured to support the funding of the FAA.

Senator EXON. To take another possible point of view or an attack on that, would you object to some type of legislation with a triggering mechanism connected with it that would mandate the allocation of excess funds in the Trust Fund on some kind of an acceptable, yet-to-be-drawn formula to the States for their determination on what they think should be done with those excess funds?

Mr. ENGEN. Some States have the organization to handle, such as you are speaking; other States do not. I believe it is time that we do provide the States some of the monies from the Trust Fund, but I would recommend strongly that this be done through the existing relationships of the FAA and the States. Provide some additional monies to the States in the sense that they can better plan their reliever airports and their smaller airports, and can join the Federal Government hand in hand in developing this Airspace System.

Senator EXON. Let me ask you about on-board avoidance collision systems. As you know, I have been very much involved in this for a number of years, and have pressed forward the position of Mr. Jim Pope, who, among others, has said that there was an air collision avoidance system back as far as 1975. As you know, Mr. Pope lost his position over that because he was a whistle-blower, and the whistle-blower protection feature didn't protect him very well.

Your Administration now is proposing a TCAS System. When will the TCAS–II System be ready for installation on all airlines and private aircraft under present plans?

Mr. ENGEN. Let me try to answer that as briefly as I possibly can, and if it is too brief, I will revisit it. Over a year ago, about 15 months ago, I decided that we had waited too long to bring TCAS into being and directed Mr. Broderick to come to agreement on the standards for TCAS by 1 April 1976. He missed by 17 days. On 17 April, we published the standards for TCAS II.

Piedmont Aviation has in being at this time a TCAS II System. I have met with Mr. Howard, and have flown in his simulator. I have seen the program and that is developing right now.

United Airlines, Northwest Airlines and Piedmont will have 14 additional systems in being this year.

Senator EXON. Could you bring your microphone a little closer.

Mr. ENGEN. Yes, sir. Can you hear me now?

The TCAS II, as you know, is the ability to maneuver to avoid in the vertical plane; pull up, push over. TCAS III is very important and it is flying today in Atlantic City in an FAA airplane, and we have had very successful flights in TCAS III which will allow the pilot to not only pull up, push over, but turn left and turn right.

The TCAS II System will be mandated, by notice for proposed rulemaking, later this year and we will have a schedule for bringing the TCAS II System into being. My goal is not to have two separate systems.

I hoped to work with the avionics manufacturers in a way that the TCAS II will be nothing more than a black box into which can be inserted components which will make it a TCAS III. Now whether that is technologically possible or not, we are just going to have to work our way through. But I don't want to create two individual systems.

Our goal is to get to TCAS III.

Senator EXON. You are moving aggressively with TCAS II on the theory that a follow-on addition to the black box would make it TCAS III; is that correct?

Mr. ENGEN. Yes, sir. That is correct.

Senator EXON. My question is, when do you think a significant number of the aircraft would have TCAS II in place, and if the technological developments continue as you encouragingly talked about regarding TCAS III, when would you see at the earliest possible date that a complete TCAS III System could be operational?

Mr. **Engen**. You have a lot there. I will try to answer them in order. TCAS II will be mandated later this year so that we would require the airlines to have TCAS II in a late 1988-89 timeframe. It would be mandatory that it would be carried in major aircraft.

It is an expensive system. It is expensive enough that we cannot expect it to become cheaper through serial production so that general aviation will pick up, other than perhaps the high end of general aviation, which are the corporate aircraft.

TCAS III. We have the money provided in 1987 for a limited introduction program for TCAS III. We have put the money into our 1988 budget request for additional money for TCAS III limited improvement program. At the end of Fiscal Year 1988, I want to stop development of TCAS III and begin to mandate its implementation in the system.

Senator **Exon**. Do you envision then, sometime in the near future that an aircraft could not leave the manufacturer until a TCAS III system was in place and considered as important as the landing gear.

Mr. **Engen**. Yes, sir. I do. I do.

Senator **Exon**. In the early 1990's, sometime, perhaps?

Mr. **Engen**. 1989, 1990. Once this becomes equipment to be installed in an airplane and has been installed, then it would be so.

This has a bearing on near mid-air collisions, and if I could just put a little balance on that a moment, please, sir. I am concerned about the philosophy of the development of cockpits in airplanes. I am concerned that just when we want pilots to have their heads out and looking about and to ensure that they are fulfilling their requirement to provide safe separation, we draw their attention to the cockpit to do a landing cockpit check, to fly the ILS, to make the final approach, and this is an anomaly.

You will find me working over the next eight or nine months to try to work with the aircraft manufacturers and the pilot organizations and the airlines to see what we can't do to draw pilots 'attention out of the cockpit.

The TCAS II-III is another one of these devices that tends to draw people inside the cockpit. We must always remember that that is a safety device that is going to be very important, but the best safety device in the cockpit is the pilot's head being outside in clear air.

Senator **Exon**. In that regard, have you ever thought of, or are you doing research with regard to make the vision of the pilots more all-encompassing. I am not a pilot, but I have been in a lot of cockpits, and I have a very great deal of difficulty seeing out. I don't believe that they have any more eyes than I do as a non-pilot.

Is not one of our problems the fact that the pilots have restricted space in which to see out?

Mr. **Engen**. Yes, sir. It is. And we aim to improve that. I think, part and parcel, we have to improve the ability of pilots to look out, as well as requiring that.

Senator **Exon**. Mr. Chairman, I guess my time is up. I will go at this further my second round. Thank you.

Senator **Ford**. Admiral, the Air Transportation Association has been working with the FAA for several months to get the FAA to increase air traffic efficiencies and decrease delays. We have touched on that all morning here.

One of the proposals was the reimposition of air-born holding by aircraft at the destination airport. I think you touched on that either with Senator Hollings or Senator Exon, but is FAA going to support the return to air-born holding?

Mr. ENGEN. In a word, no, sir. We are not. I have flown in the system for 45 years. I have done my share of air-born holding. It is not my intent to put the problem in the skys. We take our delays on the ground and we will continue to do that. I am not going to increase the amount of air-born holding that is in the system.

Senator FORD. I think that is clear enough.

What affect do you believe this proposal would have on the controller work force? Is there enough of a cushion to add more aircraft in the air? Is that one of the problems that you see when you take the position that you have?

Mr. ENGEN. Let me answer that, Mr. Chairman, and go back a moment to your previous question. I wouldn't want to imply that there is not air-born holding occurring today. On occasion when a field gets socked in by fog or something like that, we do hold. So I hope the Committee does understand that there is a certain amount of air-born holding. It is the elasticity of the system. We aim to keep that just as low as we possibly can.

With respect to the controller workforce, sir, I would respectfully say that I could add 10,000 more controllers and it would not improve the delay situation or the through-put of the system one iota.

Very carefully we monitor the controller workforce. We have established standards that we never had before. These were established subsequent to the strike and with these new standards, we have a system that is functioning as it should, sir.

I have a chart here with air traffic figures on it, and I would just put it up at this time just to let you look at where we are.

I don't want you to think that I feel we have enough fully performance-level controllers. Last year we brought on 1,000 FPLs. This year we will bring on another like amount, and we must continue to bring that up. But as I go through the system today, I find in 90 percent of the system, people are not working overtime other than what they volunteer for. People are not overburdened, except as some excruciating time of the day, and that is the nature of air traffic control, and we have to adapt to that.

But there are some centers, and some major terminal facilities which are overworked. We are concentrating on those and we are bringing on more people, putting more fully performance-level controllers in those facilities, and we need to continue to do that.

Senator FORD. In 1985, and you have alluded to this with some fanfare, Secretary Dole announced the hiring of 1,000 more controllers, which I think everyone recognized was needed—maybe long past. The 1986 budget calls for the hiring of additional 225 controllers.

Is this the last of FAA's request for more controllers?

Mr. ENGEN. No, sir. It is not. The air traffic controll force should be dynamic, just like the system that we service. If we need more air traffic controllers, we are going to ask for more air traffic controllers.

In the past few years, air traffic has been compounding at about 105-107 percent. If that continues, we will continue to place additional emphasis on additional controllers. I want to assure you that this is not a static figure. This is something that I think we must deal with on a yearly basis, looking two or three years ahead, because it takes two to three years to train a controller.

So the 1,000 controllers that the Secretary authorized, asked for, and you all authorized, allowed us to build the system for 1987 and 1988. We will meet the Congressionally mandated goals.

Senator FORD. In your estimation, Admiral, how many controllers does the FAA need to handle traffic which is projected to continue to grow, let's say, over the next three years?

Mr. ENGEN. The figure 15,225 for 1988 represents our best judgment that number which will handle the traffic in the years 1989-90. That is a fair assessment, sir.

As each year goes by, and we look at the traffic count, I would like to have the opportunity to continually upgrade that for 1989-90, if necessary.

So it would be your judgment if you are falling behind, that you would accelerate the request based on the growth, whether we have looked in the crystal ball and found the right number, or if we have missed that number and it is growing at a greater rate, you want to have the latitude in order to increase that number. I think you should have.

Admiral, in light of the fact that decades and millions of dollars of research has gone into the development of an airborn collision avoidance, which Senator Exon was alluding to, why has it taken so long for FAA to mandate their usage?

Mr. ENGEN. I think it is a very complex system which has had a lot of tugs and pulls from a lot of corners. It was out of shear frustration when in November 1985, I said to Mr. Broderick here, I want an end to this. Let's get that established and let's do it by 1 April.

We had people making careers out of the development of TCAS, and while it is a complex system, we have come to the point where we can cut metal and build equipment. We are training now to use that equipment.

We are passed the point; we are there. Now we need to start procuring and make sure that they are required in the air.

Senator FORD. Let's talk about inspectors just a little bit. The FAA has been severely criticized in the past year with respect to its safety inspector program, particularly by the General Accounting Office, which has conducted several studies of your program.

What specific steps have you taken to improve the coverage of your inspectors in order to ensure that every aircraft is adequately inspected?

Mr. ENGEN. Mr. Chairman, let me answer that, first of all, broadly and then try to zero in on the specifics of where we are.

We saw from the NATI inspection that we, the FAA, were not doing the job that we felt was necessary. We set about to change that and we set about having a more comprehensive inspection program. This takes more people. At the same time, we needed to quantify what we expected from our inspectors.

Mr. Broderick, and Mr. Luffsey before Mr. Broderick, set about to quantify what it is that we expected of each individual inspector. We have done that. That has allowed us to come up with the specific figures that we feel are necessary.

We have on board today the National Airline Inspection Program which is an outgrowth of all of the white-glove inspection and all the other inspections we have done. It is a National program that is functioning, where we bring in teams of inspectors not familiar with the airline they are inspecting, but who will ask the two hard questions: Why do it this way? Why don't you do it another way? We do it this way in the Northwest Mountain region.

From that, we have gotten a very fine response from the airlines, and I think this is part and parcel improvement in the system out there. Now today, we have on board some 1,798 inspectors—that is as of December 31—and we have some 336 administrative and support personnel for a total of 2,134. We are bringing on more inspectors. We are not through yet.

Inspectors are just like air traffic controllers. They have to be dynamically managed to be sure that we reflect what is going on out there.

Senator FORD. Admiral, my time is up. We will move to the next Senator, as to arrival. Senator Kasten.

Senator KASTEN. Mr. Chairman, thank you, very much.

I would like, if I could, Admiral, to change one of the premises that we are operating under here. We are saying that we had a good year last year because we had no accidents last year. No domestic accidents. On the other hand, we could say that the way we could predict accidents is how many near mid-air collisions did we have?

Do you have the numbers for the last several years on mid-airs? I have numbers there.

Mr. ENGEN. I do.

Senator KASTEN. 311 in 1981; 475 in 1983; 589 in 1984; 777 in 1985; 812 in 1986. Is that correct?

Mr. ENGEN. Approximately. We are at 829, give or take one or two, for 1986.

Senator KASTEN. So we are seeing a dramatic increase in near mid-airs and we are also seeing a trend. Not only is it going up, but it is going up year upon year, upon year, upon year. It is also my understanding that there may be some glitches in that.

You have a new system which automatically reports near mid-air collisions. When the two—what are they balls, doughnuts, or whatever they call them—they come together and it automatically reports on that screen.

Mr. ENGEN. Halos.

Senator KASTEN. Halos. Excuse me. It is also my understanding that you have changed the rule from 1,000 to 500 feet in vertical separation; is that correct?

Mr. ENGEN. No, sir. It is not. We can get all wrapped around the axle on what is defined as a near mid-air collision. May I address those figures?

You are indeed right; 1982 to 1984 is a different ballgame altogether. Because I have spent my life dealing with near mid-air collisions—when I was on the Safety Board I became very interested in it. I brought that interest with me to the FAA as Administrator.

When it was pointed out to me, very forcefully, in late 1984 that our reporting system was not as valid as we thought it was, I set about to change that. So what you are seeing really, is not an increase in the numbers of near mid-air collisions so much as you are seeing the numbers of near mid-air collisions reported.

We finally have a data base in 1985–1986 which I can stand by and I can make improvements and changes to TCAs and to en route procedures, and to VFR–IFR traffic interface. So we have a data base we can use.

The figures you gave me for 1985 and 1986 are correct.

Senator KASTEN. Then you are making my point. In one year, with correct figures, we had 777, and the year following, that increased significantly, more than ten percent to the two years that you would agree to.

Now we are seeing an increase in near mid-airs. Don't you believe that that is an indicator, that is an important indicator as to the level of air safety that we have, and that we ought to be concerned, not just because we had a year without accidents, but we ought to be concerned because we see this important indicator trend going the wrong way?

Mr. ENGEN. I want to share with you my concern about mid-air collisions as well. One is one too many, particularly if you are involved in it, it is far too many.

But let me assure you, the difference—if you analyze, and I don't to get too deeply into numbers, and I don't want to cook things——

Senator KASTEN. I am just looking at trends.

Mr. ENGEN. Yes, but let me tell you—let's take 1985 and 1986, if we can. We looked at 1986 very carefully. We find that the number of critical, those critical near mid-air collisions, those that would come close, closer than 100 feet, are staying about the same.

The number of non-hazard are those, if which neither pilot did anything, they would still miss by three miles or something like that—or 2.5 miles—increased dramatically. So we have an increase in the non-hazard and kind of a constant in the critical.

So the statistics tell me that we still have the same problem we had before. But, we have the traffic count going up. It is compounding at 105 to 197 percent.

Senator KASTEN. You know, I am not going to acuse you of cooking figures, I am not going to cook figures either. We have a trend that is going the wrong way here. And whether they are close mid-airs or not close mid-airs, we have a problem.

Mr. ENGEN. And I want to deal with that.

Senator KASTEN. And the problem is occurring also on the runways. Now this is something that I just know from flying, and I would guess that most people in this room—the runways are jammed. You have people lined up in part because of what Senator Danforth said, everyone leaving at five minutes after eight, and you can go down an airport terminal now and you can see every single plane is leaving at either five minutes before eight or eight o'clock or three minutes after or six minutes after. You know it is impossible to have that happen.

Now my understanding is that you also keep track of problems on the ground. Is that a runway incursion? Is that the correct——

Mr. ENGEN. Yes, it is, Senator.

Senator KASTEN. My understanding is that those are also going up dramatically; is that correct? More than ten percent per year?

Mr. ENGEN. They have gone up, indeed. Since I first started to fly, when I watched one airplane land on top of another one in 1942—you know, airports attract airplanes. We have a human system. We have air traffic controllers, we have pilots who are trying to prevent accidents. When you have a human system, you have human failings and you have controllers who can make mistakes. You have pilots who can make mistakes.

The increase in the number of runway incursions, while deplorable and we are doing everything we can with respect to training and improvement, is not out of control. Please don't think that the increase in the near mid-air collision reporting rate or these incursions indicates that we are going critical.

We have a problem and we need to address it and I agree with you.

Senator KASTEN. I appreciate your saying that we have a problem and we need to address it, because the point of these questions was to, kind of, if I can establish the fact that despite an excellent record last year, in terms of actual collisions or accidents, all of the trend indicators are going the opposite way.

You can argue that we didn't have a safe year last year, we had a lucky year last year.

Mr. ENGEN. I don't trust in luck.

Senator KASTEN. I hope that that is not the case. But it doesn't look to me as if the trends are going the right way. Let me just quickly ask a question, if I can, about inspectors.

You responded to Senator Ford about inspectors, but it is my understanding, at least according to one of the GAO reports, that 80 percent of the inspection time is being expended in inspecting and certifying new airlines and only 20 percent of the inspection time was spent actually inspecting existing airlines.

First of all, is that true? And if it is true, maybe my numbers are not quite right; mabye it is 75-25. But my numbers were 80-20. How is it that you inspection program can be so non-defined, if you will, so that some airplanes or some airlines are going through an entire year, or at least close to a year without ever having inspection?

Mr. ENGEN. Let me see if I can put that in context. I go back to my National Transportation Safety Board days and my early days as administrator. There was a time when the air taxi operators and the 135 operators were proliferating at a prodigious rate.

We, the FAA, in 1982-3-4 and part of 1985 timeframe I think were spending an inordinate amount of time trying to certify and be sure that those who entered the market would do so providing safety for the air traveling public. It took a lot of our time. It took us a while to recognize that we were being drawn off the mark.

Our National Airline Inspection Program, to which I referred, is designed to get back—that 80-20 figure is certainly not true today. We are expending the majority of our inspection hours looking at the airlines in existence today, and I think that our fine system and our civil penalties that we have placed out there would indicate what our emphasis is.

Senator **Kasten**. Are you increasing your penalties? That was one of the criticisms we had last year, was there were an awful lot of slaps on the hand, and not strict, expensive, tough kinds of penalties.

Mr. **Engen**. I don't want to be cute, or anything like that. But $1.5 million is a little more than a slap on the hand, and $2 million and $9.5 million—those are fines designed to gain compliance in the market out there. They are designed to make the air carrier involved, who has not been following their Federal air regulations to come into compliance. But they are also designed to get the attention of other people out there.

We are continuing that program. I do not believe in large fines for large fines' sake. I believe in trying to gain compliance. That is my goal, sir. To assess only that amount which is required to gain compliance with the Federal air regulations.

Senator **Kasten**. Admiral, we share the same goals. I appreciate the job that you are doing and I also appreciate your recognizing that it is not perfect out there, and that we had a good year in one statistic last year, but we have a lot of work to do. I look forward to working with you.

Thank you, Mr. Chairman.

Senator **Ford**. Thank you, Senator Kasten.

Senator Danforth.

Senator **Danforth**. Admiral, some people have suggested that airline deregulation has put such pressure on airline profits that airlines have been cutting corners in safety matters, particularly in maintenance. Is there any truth in that comment?

Mr. **Engen**. Senator Danforth, if I could go back again to that earlier time, in the 1983 timeframe. I think in all honesty, sir, that we saw some new entrants who were, indeed, cutting corners. We recognized that and we went after then, tooth and tong.

I do not see airlines today skirting the Federal air regulations. They are compliant. I guess that is a round about way of saying I do not see profit motive taking down safety today.

There was a time when I think it was a concern, but I think we got everybody's attention. I find good compliance today, and I am very proud of the commercial airlines out there today. I think they are doing a good job.

Senator **Danforth**. Do you think that drug use is a significant problem with respect to air safety?

Mr. **Engen**. If I could answer that in two parts; one about the FAA, and one about the public sector.

The FAA is nothing more than a diagonal slice of the United States. The United States does indeed have a drug problem. President Reagan has an Executive Order out on drugs and drug abuse. We are endeavoring to do everything we can to assure, in the FAA, that the public will be flying in a drug-free environment.

I am sorry to say to you, sir, that I am sure that I will find some people this year who are abusing alcohol, or taking drugs, and we have programs for that. I do not think it is rampant. I think that we reflect the aviation community, which generally speaking, is aware of the impairment of alcohol and drugs, and through peer pressure we generally find the person who is abusing alcohol or using drugs.

I think we need to test. I think it is a requirement and over the last two years, I have been trying to devise a program which will allow us to test our FAA employees involved in safety, and Secretary Dole has been highly supportive. When the President put out an Executive Order and Secretary Dole has placed her Order out there, we are working together to come up with that program which will do that.

There is a public sector problem, and as sure as you and I are sitting here, I am concerned that those who fly airplanes are nothing more than a diagonal slice of the United States, and if the United States has a drug problem, we need to be sure that those who carry us, and who we trust our lives to, do not have a drug problem.

Senator DANFORTH. Is mandatory random testing a good idea for both FAA employees and airline employees?

Mr. ENGEN. I think in the military that random testing is a very good procedure. The FAA program that I have initially placed in being is one of entry-level testing and annual testing. One can argue that that is not as effective as random testing and I would probably have to say, clinically, it is probably not.

I think that probably we will have to move towards random testing in order to get everybody's attention, eventually, in the entire sector, both the United States public, as well as within the Agency.

Senator DANFORTH. I am not sure that I followed the final clause in that sentence.

Mr. ENGEN. I think the final clause, Senator Danforth, is that random testing is a more effective way of testing for drug use than annual testing.

Senator DANFORTH. For both airline personnel and FAA personnel? Safety related.

Mr. ENGEN. Yes, sir. It is.

Senator DANFORTH. Thank you, Mr. Chairman.

Senator FORD. Senator McCain.

Senator MCCAIN. Thank you, very much, Mr. Chairman.

Thank you for your kind words of welcome to this very important Subcommittee, and I look forward to the opportunity of working with you on some of these crucial issues.

Admiral, I also appreciate the outstanding job that I think you have done as Administrator of the FAA. I believe that I have some expertise in the areas in which we are talking, having been an old pilot—not necessarily a good one, but an old one.

I would like to make a few comments, if I could, on some of the previous testimony, and questions, and then ask you a couple of questions or comments. First of all, I was certainly pleased to hear that some of the funds are going to be more forthcoming from the Trust Fund.

Those of us, particularly that come from rapidly growing areas, are badly in need of those funds, and I was indeed pleased to know that the authorization request will be more reflective of an ability for us to use those much needed Trust Funds.

I do not agree with you on the problem with scheduling in regards to the lack of influence you might have over that. I have been, and seen quite often, the rush to leave the gate because of the awareness on the part of the pilots that unless they get out early, they are not going to be leaving. I think it has a definite impact on safety procedures pre-flight procedures, and whether it is stated that that doesn't, I think it is an obvious impact and although I certainly wouldn't view it as re-regulation, I believe that the consumers, the airline passengers should be made aware that it is reducing, slightly at least, the margin of safety when airlines are scheduling way too many take-offs and/or landings than is humanly possible.

I am not sure what leverage you can exercise in that area, but I do believe as Senator Hollings pointed out that it is a definite safety factor and one which falls under your purview.

I would also request for the record information as to why National Airport wasn't put on that list of 13, as opposed to Dulles. I am sure that there were good reasons for that, but my experience with National Airport versus Dulles is that something needs to be done at National Airport.

Most professional pilots that I know predict that if there is going to be an accident, it is going to be at National Airport, or in San Diego.

Mr. ENGEN. National is already on a list. It is a slot-controlled airport into which we meter the number of slots, Senator.

Senator MCCAIN. Thank you. The subject of recent aircraft accidents, as you mentioned, the mid-air that took place out in Utah, and I believe that Mr. Hendricks might corroborate that most recent mid-air collisions have taken place between aircraft that are non-transponder equipped in relatively high density areas.

I think is nearly time, or perhaps overdue time, that we require transponder-equipped aircraft in high density areas or controlled air spaces. I am aware that this adds an increased expense to aircraft owners, yet when we are talking about the price of even the least expensive civilian airplane today and the relatively lower prices of transponders, I hope you are going to seriously consider imposing that at least in high density areas because it just seems to me that the record of these accidents, non-transponder equipped aircraft, at least one of them—usually clear weather, not in bad weather conditions—indicates that this might be something that we should address very soon.

Would you respond?

Mr. ENGEN. Yes, sir. I might add that Secretary Dole either has announced or will announce very shortly a new Mode C rule which would accommodate that which you are talking about, and a new Mode S rule which will phase into the system the Mode S transponder. You are right about the TCAs.

We are also drawing into a single group all the TCAs. Where in the past we had 9 in group one, and 14 in group two, we are now going to have 23 TCAs out there into which there are stringent requirements on equipment that must be on board and procedures that will be used in the TCA.

Additionally, we are structuring them so that people, pilots around the Nation will more easily recognize the boundaries and more easily equate with the TCA as a positive-control airspace.

Senator McCain. Mr. Hendricks, was I incorrect in those allegations that I made?

Mr. Hendricks. No, you were not. Unfortunately, though in the Cerritos accident in Los Angeles, and the Salt Lake accident that just occurred, all of the aircraft involved had the transponders. Unfortunately, one of the airplanes in both cases, there was an intruder in the protected airspace.

Mr. Engen. But I might add, they did not have altitude encoding altimeters.

Senator McCain. Thank you. Which brings me to an area that I am deeply concerned about, of which there are 50,000 flights over per year. There have been over 11 accidents, killing around 55 people in the last five years. Last year there was an accident where an individual flying in the Grand Canyon simply crashed while displaying his aeronautical skills to his family, and previous to that, as you are well aware, there was a mid-air collision between a sight-seeing aircraft and a private airplane.

Admiral, I am deeply concerned about the lack of control over the Grand Canyon. I am also deeply concerned over an apparent lack of interest on the part of people in your organization in doing something about this.

We are talking about one of the most heavily trafficked parts of America. We are also talking about an area that needs to be protected for all of the reasons which has made it one of the great natural wonders of the world.

I am hopeful that you will order your people to thoroughly investigate the requirement, for one, prohibition of flights below the rim of the Grand Canyon, and number two, the installation of radars in that area so that we can control the traffic over the Grand Canyon.

A case can be made, and I believe it is accurate, that there are areas of the country that are under positive radar control which are less heavily trafficked than the Grand Canyon. I think we ought to address that and address it immediately before we have further accidents and tragic loss of lives.

Mr. Engen. Thank you, Senator. I certainly agree with your concept, and we have been meeting with the operators, as well as general aviation people with respect to the Grand Canyon for the last 18 months.

In mid-March, this year, we will put out a special Federal air regulation which establishes the procedures for operation of the aircraft in that air space, above the Grand Canyon up to an altitude of 9,000 feet MSL—mean sealevel.

This would prohibit flight in the area unless specifically authorized by the local FAA Flight Standards District Office—I am not going to go down this, but it really tightens up the Canyon.

You mentioned radar. We have looked at that carefully and we will continue to look at that. I do not see that as a viable alternative as this particular time, but that doesn't mean we won't keep looking at it.

I would like to continue to work with you, as well as with the State Aviation Director of both California and Arizona.

Senator McCain. I appreciate that, Admiral, but, again, having—I guess the statute of limitations has expired—but some years ago having flown down the Grand Canyon myself, as young military pilots are sometimes wont to do, I am fully aware that unless we have some kind of monitoring procedures, I think it is going to be very difficult to enforce those rules

Mr. ENGEN. Let me assure you that we will indeed enforce those. You asked Mr. Hendricks a minute ago a couple of questions. He personally went out and met with the operators in the local area there, and has had intimate knowledge with the procedures out there.

The procedures we are trying to set will do just what you are trying to do; tighten it up so we don't have interlopers in there without a full briefing, knowing what the traffic rules are, establishing the traffic rules, the direction, the flow of traffic and control of all that traffic in there.

Senator MCCAIN. Thank you. My time has expired. Thank you, Mr. Chairman.

Senator FORD. Thank you, Senator. Now I want to call on Senator Kassebaum. As ranking subcommittee member, I would have called on her earlier, because of her position, but she insisted that we follow the rule that when you arrive, you will be called upon. So, Senator, it is time you arrived.

Senator KASSEBAUM. Thank you, Mr. Chairman.

Admiral Engen, I would like to ask first about the Trust Fund monies because this has come up in several questions. The Administration's budget does recommend $2.4 billion for FAA operations.

This is a significant change, of course, in the amount of funding that was designated at the time we drew up ADAP and the authorized levels for the Trust Fund. And, as much as we want and have wanted additional monies for aviation, funding for FAA operations has traditionally come out of general revenues. I personally believe a good argument can be made that it should come out of general revenues because it does benefit the Nation as a whole to have a sound and safe airway system.

But, let me ask you, if indeed this raid into the Trust Fund, so to speak, does occur, do you anticipate this being a one-time effort, and how do you think it will affect the capital spending and research spending levels designated in the Airport and Airway Improvement Act?

Mr. ENGEN. Senator, recognizing that I am treading on very, very thin ice with respect to past positions, let me give you my honest and candid answer. I believe, first of all, that we should be using that Trust Fund as I have stated before. I believe that we have the ability to run this great Airspace System of ours based upon the user fees that are levied right now without increasing taxes, without doing away with taxes.

I believe also that it ought not be a 100 percent free ride, because there are public use aircraft, there are military aircraft out there using the system.

The air traffic controller in my view is providing a service to that person who lands at an airfield or flies in air space. So I can in my own mind equate that person's salary to the Trust Fund.

But I would never, ever put the emphasis upon taking away from capital improvements because we need those capital improvements. The F&E is a very vital part of our budget and we need that for the future.

To the extent we can, I would like to run the Agency on the Trust Fund.

Senator KASSEBAUM. So you don't see, for 1988, with this additional request for funding of FAA operations from the Trust Fund, cutting into capital projects, for example the F&E accounts?

Mr. ENGEN. No, Senator, I don't.

Senator KASSEBAUM. So you will see an overall increase in spending from the Trust Fund, of great significance, right?

Mr. ENGEN. I think it will be noticeable. Great significance. It is designed to begin to take down that Trust Fund excess that we have had. The F&E is up 67 percent above 1987. So we are going for the capital equipment. We are improving capital equipment in our 1988 budget, while we are still saying, please let us use this money to help fund the rest of the Agency.

Senator KASSEBAUM. I would like to follow up for a moment with some questions on the air traffic controllers. You mentioned that on the whole you believe the work force is sufficient at this time, except in some areas, of course, where there is increased traffic.

Two things. One, do you feel that our training facilities at this point can accommodate any more trainees; and, two, how do you respond to some growing concerns that have been expressed about controllers who are working six-day work weeks and mandatory overtime?

Mr. ENGEN. We have the capability in the FAA, at our academy, to improve our training capability. We have excess capacity at the Oklahoma Air Traffic Control Training Facility, to try additional controllers. And we are doing that.

We have looked very critically at this over the last year, 18 months, and have decided that there is a better way to do business and we are starting to do that now and we are using different procedures to get more trainees through the system, and I think we will all benefit from that.

I keep hearing about those people who are working six-day work weeks, and I watch on television as some of my air traffic controllers say, "I haven't had two days off since 1981."

As I look at each one of those cases, I find that, in their sincerity, in their desire to speak what they feel very deeply inside, they overlook often what has transpired. I don't want to diminish one iota those people who have been stroking it very hard and have been working those six-day work weeks. But there are tradeoffs in the past.

I want to assure you, I just don't want to make light of this because if I make light of this, I have to face the people who are doing that when I got out week after next when I go out to Seattle and Anchorage and talk to my people out there.

I want to be sure that you understand that we are endeavoring wherever that is occurring to change that in real time. We are focusing on Chicago-O'Hare, which is one area. Chicago Center, Indianapolis, Cincinatti, Leesburg, Washington Center, a little bit in Atlanta, and we are trying to put in the people there to fix that in real time.

Senator KASSEBAUM. What are you doing at the FAA to increase the percentage of full performance controllers, and have you not changed the qualifications that determine what is a full performance controller?

Mr. **Engen**. We were given relief, after the strike, in which to accelerate training of the FPL. In the past, we had required calendar time of three years be required. We were given relief to make it two years, provided that the individual could meet the requirements.

I want to assure the Committee that those people who are qualified as FPL meet all the requirements. It may not be that they have had the calendar time passage of three years, but they have met all the requirements. They are monitored carefully and before they are certified, they must demonstrate themselves.

Now I have to be very, very honest with you, that if you have an air traffic controller who has eight years, he or she can do his job with more ease than a person who has three years. But I assure you, as I talk with those people, and as I work with them, and control me as I fly about, I can't tell the difference between the three-year and the eight-year person, and we do have supervisors and we do watch.

I don't want to make light of it. We have to continue to be sure that safety prevails.

Senator **Kassebaum**. I think that is very important and I hope that you will continue monitoring it very closely. I know that you are aware of the importance of retaining trained personnel and I think we have to be very sensitive to the strains that peak demands place on controllers.

I find it a bit troubling that we seem to be a little slow in reducing those strains. I am about to run out of time, and I have one more question.

Regarding the announcement made by Secretary Dole yesterday, which I think was an important announcement regarding traffic delays, I think if nothing else, it will get the airlines' attention in terms of their responsibility to try to meet scheduling demands.

The Secretary announced that the FAA will provide technical support to help airlines adjust their schedules. The airlines, of course, say, they are just meeting the customers' demands. If the airlines do not choose to sit down with you to adjust their schedules, what are your plans?

Mr. **Engen**. I honestly believe that when the airlines look critically at their schedule in light of what the capacity of the airport is, and given the immunity that Secretary Dole has the power to temporarily grant, I believe that we are going to come to grips with the issue.

We do have a technical support program to work with the airlines, not yet totally defined, which we can show traffic flow to any specific airport from around the Nation. I am very proud of this and one of the things we can do today with this wonderful technology and the equipment we are buying is to look at real time in every single airplane that is flying in the United States air system, and we can do that in our building right there.

We can color code airplanes below 18,000. We can color code airplanes above flight level 240. We can mask out all the other airplanes and look only at those airplanes going to St. Louis, or to

Chicago. We have a wonderful capability and we want to share that with the airlines.

Senator **Kassebaum**. Do you envision any further expansion of the high density rule?

Mr. **Engen**. I hope not.

Senator **Kassebaum**. Thank you, Mr. Chairman.

Senator **Ford**. Thank you, Senator. One of our new Senators here, and new to this Committee, from Louisiana, Senator Breaux. Senator.

Senator **Breaux**. Thank you, Mr. Chairman, and thank you, Admiral, for your testimony.

One thing that I did not notice in your statement was any reference to the progress being made on windshear detection devices, which obviously are some of the major causes to two of the most recent tragic accidents, Delta at DFW, and Pan Am in New Orleans.

I was wondering if you might tell the Committee and bring us up to date on the progress being made, the efficiency of windshear detection devices, where they have been installed and what is the prognosis for them being installed in all potential airports that have windshear problems.

Mr. **Engen**. Yes, sir. It has been with us since time immemorial, but recognized in the last few years, through accidents, I might add.

We are approaching this through 360 degrees; we are making sure that we don't just key on any one system. As you know, we have the low-level windshear alert system installed at some 110 airports throughout the United States. That has its own frailities in the sense that you are dealing in real time and you are not forecasting.

We are developing terminal Doplar weather radar. We are purchasing 15 of those sets this year. We have follow-on terminal Doplar weather systems.

Senator **Breaux**. What is that aimed at forecasting?

Mr. **Engen**. Aimed at forecasting windshear.

Senator **Breaux**. I mean at what altitudes?

Mr. **Engen**. Around the airfield and from zero to 5,000–6,000 feet.

Senator **Breaux**. Are any of those installed?

Mr. **Engen**. We have had them installed on an trial and research and development basis at Denver, at Memphis and at Birmingham and we are buying new systems as a result of that R&D.

Senator **Breaux**. How about at the two airports where we had the two most serious crashes?

Mr. **Engen**. They will, in due course, be installed. Also, we have gone to Boeing——

Senator **Breaux**. I just wonder why we didn't select New Orleans and DFW since they were the site of the most serious accidents.

Mr. **Engen**. They are part of the 15, I believe. I don't have the 15 in my mind, but we are putting the emphasis where the occurrence is most likely to happen.

But let me come back to the 360-degree approach. Pilots have a big part of this, and we are working with Boeing, United Airlines, and NCAR, National Council on Atmospheric Research, and other people, McDonnell Douglas, Lockheed, to develop a training system. I have let a contract for a million dollars with Boeing to come up with this training package which will be given to the airlines to train people. We have on-board detection devices that are now coming into being.

Ruby-lazer technology, other safe-flight technology—I don't want to give trade names—but that analyze rates of sync and tell the pilot—Pull up. Pull up.

I have flown these in various simulators around the country. So we have a tremendous amount of effort going into windshear right now. I feel good about it, but I will never rest.

Senator Breaux. Say at the two airports where we had the two major crashes. What, if anything, is available now at the airports where the two major crashes occurred that wasn't available at the time of those crashes.

Mr. Engen. Well, probably not a lot. But, yet a lot. Let me tell you, pilots understanding windshear is probably one of the most vital factors we have in preventing windshear accidents. Pilots being able to analyze what they see out there, and both those accidents, pilots had an opportunity to, one, refuse to take off; two, refuse to make his approach.

Now people may argue with me, but being a pilot and knowing the conditions that are in those kinds of black clouds that were at Moisant and Dallas-Fort Worth, indications were clear. I don't want to be put the total emphasis on pilots.

Air traffic controllers need to be alert. We need to develop that terminal Doplar weather radar. We need to tell the pilot out there, because there is clear-air turbulence and there is clear-air windshear that you can't see and into which pilot have no warning whatsoever, and we need to deal with that.

Senator Breaux. I don't want to belabor the point, but at those particular two airports, what is the prognosis for the implementation of either a Doplar radar or some other detection system for windshear?

Mr. Engen. There are windshear detection devices in place right now. Enhanced LWAS, low-level windshear reporting system is there. The terminal Doplar weather radar is being procured this year, will begin to be installed at the end of this fiscal year. I don't have the exact timing. I would be very pleased——

Senator Breaux. Are those two airports on line for that installation?

Mr. Engen. I don't have that with me, and I would be pleased to provide it for the record.

[The following information was subsequently received for the record:]

The delivery schedule for the installation of modified NEXRAD systems at high density terminal locations follows:

Location:	Date [1]	Location:	Date [1]
FAATC	February 1990	Houston	September 1991
Washington	May 1990	Orlando	October 1991
Atlanta	November 1990	New York	November 1991
Chicago	February 1991	Pittsburgh	December 1991

Miami/Fort Lauderdale.	February 1991	Minneapolis	January 1992
Dallas/Fort Worth	April 1991	New Orleans	February 1992
Denver	May 1991	Memphis	March 1992
St. Louis	June 1991	Newark	April 1992
Tampa	August 1991		

[1] Based on a July 1987 production contract award.

Senator **Breaux**. Those are the two airports where we have had the two most tragic crashes, and we have a device that is being projected for installation and we don't know if it is going into the two airports that are most——

Mr. **Engen**. Well, I do know and I didn't prepare, I am sorry to say—I didn't have windshear on here, and I should have. I apologize.

Senator **Breaux**. I know. It is not in your statement, either.

Mr. **Engen**. I have been dealing with in real time for the last four years. When I was on the National Transportation Safety Board, I was at Moisant, and I helped investigate that accident. I was Administrator when the Dallas-Fort Worth Delta accident occurred, and I am aware of windshear. In fact, when I leave here—whenever I am permitted to leave—I am going straight to a hotel and talk about windshear.

Senator **Ford**. If that is a luncheon, we might be able to make it, Admiral.

Mr. **Engen**. I am going to talk to Dr. John McCarthy and to ALPA and to the gathered airlines about windshear detection and what we are doing with respect to windshear.

Senator **Breaux**. Since it is not in your statement could the Committee have a summary of where we are and a prognosis of which airports are on line for any kind of windshear detection system.

Mr. **Engen**. Mr. Chairman, may I append that to my statement?

[The following information was subsequently received for the record:]

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St. Louis	June 1991	Newark	April 1992
Tampa	August 1991		

[1] Based on a July 1987 production contract award.

Senator **Ford**. You certainly may. I might also say to my good friend, that this is only one of several hearings that we will hold and we will get into that arena.

Senator **Breaux**. One other quick point, Admiral, in your testimony you talk about the drug testing question, which Senator Danforth had gotten into to some extent. You point out that within

DOT, the Secretary now has in place a comprehensive drug testing program that includes extensive drug awareness, education programs, drug testing for departmental employees in critical safety positions, et cetera.

You include air traffic controllers, inspectors—all will be subject apparently to a testing program. This is, of course, for critical on-the-ground employees, which I totally agree with.

You talk about commercial airline pilots and the crew and that we are only at the stage of saying that rulemaking efforts will continue. In other words, we have made much more progress with the on-the-ground people than we have apparently with the people who fly the planes.

I was wondering, are we having a problem with that? What kind of response are we getting from the airline pilots and the companies that employ the pilots. I find it unusual that we are testing on-the-ground people, but we have no program in place for testing the people who fly the planes.

Mr. ENGEN. I must operate by the Administrative Procedures Act, the Act, and the rulemaking process is for the protection of everybody who uses the aviation system.

I must publish advance notice of proposed rulemaking or rules, and let people comment on it.

Senator BREAUX. That would be the same for your employees, wouldn't it?

Mr. ENGEN. Well, yes, and I have worked with my employees over the last two years. We have done that, and we have come to grips with that. We are going to march off and get into our testing program, as I said earlier.

But, generally speaking, ALPA is opposed to drug testing. Generally speaking, I find that air carriers are for the drug testing program. We are just going to have hearings and hear what people are saying out there and be sure that we implement a rule that is for the good of all.

Senator BREAUX. Is it correct to say that all the testing that we do as a Nation for the people who fly the planes currently in place would be that test, or that the pilot would have to take it at the time he takes his annual physical?

Mr. ENGEN. That is correct, sir. And I would add one caveat, unless there is reasonable suspicion that that person is a drug user or abuser.

Senator BREAUX. You do not think that that is sufficient for the people who are on the ground working for you, do you?

Mr. ENGEN. I have put in my annual program, in addition to the entry-level. I have said that I believe if you are going to look clinically at drug testing, that random sampling is probably the most valid way you are going to ensure that there is not drug use.

Senator BREAUX. That is what I am saying. You are putting a random testing in for your employees.

Mr. ENGEN. I am not at this time, sir. Secretary Dole is, and I will follow that order. Again, we have to work into it with the procedures, and yes, I will get there; and yes, it will be that way.

Senator BREAUX. Is that your recommendation for the pilots who fly the planes?

Mr. ENGEN. Yes, it is.

Senator **Breaux**. What is the likely prognosis on that outcome?

Mr. **Engen**. I can't—our comments close on February 23rd, and by law, if you will excuse me for taking a side step here, by law, I really ought not to be rendering any judgment on this. When those comments come in on the 23rd, we will consider them and we will sit down with the people involved and we will come up with that rule which will do what needs to be done.

Senator **Breaux**. Thank you, Admiral. Thank you, Mr. Chairman.

Senator **Ford**. Thank you, Senator.

One of our new Senators, also; Senator Kerry, from Massachusetts.

Senator **Kerry**. Thank you, Mr. Chairman. I am delighted to be here with you on this Subcommittee.

I come here wearing, I guess, a couple of hats, but one of the pleasurable ones is I have been a pilot for 20 years. I have a multi-IFR commercial rating, and glider and seaplane ratings, and I take an enormous pleasure and still do in piloting.

I must say, like many people, I think, as of late, those of us who go up in the skies have a slightly different attitude. I welcome these hearings on airline safety.

One of the other hats that I guess we all wear, and this is not the subject of this hearing and I recognize many of those complaints don't fall under the purview of the Admiral and the FAA, but you and I spoke about this yesterday, Mr. Chairman, and I just wanted to say that I am happy that you are going to be having hearings that will delve into the entire panoply of issues regarding the 6airlines.

I personally don't understand why many people that don't have to fly are flying today. I think that consumers are abused by the airlines and I, for one, am tired of also being lied to by the airlines. I know you have had that experience.

I have gone to get the last flight out to Boston, and been told that it was cancelled because of mechanical difficulties, and done a little investigating, and found it wasn't cancelled at all because of mechanical difficulties; they don't want to fly because they don't have enough people on board, so they just cancel it and bump you and that is that.

The horror stories I have heard in lines waiting are so rampant today that I think this Committee has an obligation to begin to look, once again, at what is going on. No one can tell me that we don't have the ingenuity and management creativity to schedule the loading of an aircraft near its slot time, or near enough to its slot time so that people don't just sit in an aircraft with air conditioning that has broken down for an hour and a half waiting for the opportunity to fly out.

It seems to me that some of the Air Transport Association recommendations with respect to increasing our efficiency at moving planes in and out ought to be taken into serious and quick consideration. I, for one, have promised enough constituents standing in line waiting for aircraft, or on the airplane, that we would look at it and try to do something about it.

This Senator is delighted that the Chairman wants to do that and intends to. If any signal can be sent to the airline industry, it is "this process has just got to stop". From a business point of view, and a competitive point of view, the number of productive person hours that are lost, I understand, are somewhere around $3 billion annually. It is a disgrace from a competitive and business perspective.

I wonder, in that light, with this chart over here, I would like to ask you if you would share with us the meaning of that chart with respect to the current availability of air controllers versus the full performance levels that we ought to be having, and where you expect to be by September, which I believe was the deadline in 1987.

Mr. ENGEN. Yes, sir, Senator. With respect to the FPL category, we are required to be at 70 percent at the end of September. The facilities should be manned at 70 percent. I am required to be at 15,000 total numbers. We are going to meet those numbers and I will make sure that we do.

Senator KERRY. Let me just ask you, 70 percent would put you at about 10,600-some, somewhere like that, with the increased request of this year. Is that correct?

Mr. ENGEN. What I was asked to do was to do that by facility, and that is going to be pretty difficult to do. If we look at it nationally, we are there now. If we look at it by ABC tower, or XYZ center, we are not. I am moving people about, training people and making sure that those who enter the system go to the right places in order to comply with what you all have asked me to do.

Senator KERRY. It is my understanding you have 9,555 full performance level controllers now? Is that correct?

Mr. ENGEN. Yes. That is the end of December.

Senator KERRY. All right. And to be up to the level that we ought to be by September of 1987, you have to be 1,000 or so above that. You are saying then that you will bring on another 1,000——

Mr. ENGEN. No, sir. I will bring on in the sense that they will be qualified.

Senator KERRY. Will they be at full performance level?

Mr. ENGEN. Yes, sir.

Senator KERRY. So you will have to have another 1,000 certified as full performance level between now and September.

Mr. ENGEN. I will have 1,000, but I think if you look very carefully at the numbers it is not a requirement—it is going to be something like 600 or 700; something like that.

Senator KERRY. So you won't have the full level required at full performance level.

Mr. ENGEN. I will have. I will have, sir.

Senator KERRY. That means you will have 1,000 more at full performance level.

Mr. ENGEN. We are not talking about 15,000 as the total number. We are talking about 13,500 as the number of air traffic control personnel. In the total number you see up there are some 1,500 air traffic assistants. There are some supervisory people in there that don't count against those numbers.

So, I am literally, if you will excuse me, at the 70 percent level nationally, today.

Senator **Kerry**. It is obviously my confusion and I am really just trying to clarify my confusion. It is my understanding that we required you to have a work force level of 15,000. Correct?

Mr. **Engen**. Yes.

Senator **Kerry**. And you have requested an additional 225 this year.

Mr. **Engen**. For 1988.

Senator **Kerry**. So the 15,000 will be the base line for the 1987 requirement?

Mr. **Engen**. Yes, sir.

Senator **Kerry**. And the 70 percent of that is 10,500.

Mr. **Engen**. Yes, sir. I see what you are doing, but that is not what we measure against.

Senator **Kerry**. Why not?

Mr. **Engen**. Because 1,500 of those people are air traffic assistants and will never be FPL people. So you take that 1,500 off there and you come up with 13,500. So 13,500 is the total number of FPLs that I could have.

Senator **Kerry**. Is that in fact what the requirements set forth?

Mr. **Engen**. Yes, sir.

Senator **Kerry**. It is. With respect to that, there were, I take it, some 828 near misses this past year. That is up from 311 near misses in 1982. Is that correct?

Mr. **Engen**. That is right.

Senator **Kerry**. What does that say to the traveling American? Are the odds higher that they are going to be in an accident?

Mr. **Engen**. As a pilot, let me talk to you as a pilot. I recognized in late 1984 that we were not reporting near mid-air collisions as well as we could, that a lot of them were dropping through the cracks.

That 1982 figure represents reports, but I will bet you that there are another 200 reports that fell out of that system. I can't vouch for that right now. I set about to change the reporting system, and we did that. We now have a valid reporting system in 1985 and 1986. Please don't go back beyond 1985 and compare 1982, 1983, 1984 with 1985 and 1986. They are entirely different numbers. But you can compare 1985 and 1986, and there has been an increase.

Senator **Kerry**. No, in bringing the force level of air controllers up to the requirement, is that a level which you feel adequately meets the increase as a consequence of deregulation, or is that a preset level which in fact is lower than it ought to be measured against the increase of traffic.

Mr. **Engen**. That is a number, Senator, that was derived based on the traffic count and what we anticipate what the traffic count will grow to. It is an anticipatory number and it is one that I have great confidence in.

Senator **Kerry**. Does that level permit you to implement some of the ATA's recommendations with respect to holding patterns and in-trail distance, et cetera?

Mr. **Engen**. I have told the Air Transport Association I am not going to increase the amount of air-born holding. I have told the Air Transport Association very critically, in a real time basis to reduce the end-trail separation. That is a good idea and this can be done.

Senator **Kerry**. What about the possibility of a 10- to 15-minute holding pattern, maximum, so as to sequence with greater rapidity. The result would avoid winding up with ground delays and some of the larger separations you may have just as a consequence of take-off distance?

Mr. **Engen**. As you know, we do a little bit of that right now. That is the rubber band in the system, and if something occurs, if traffic count gets too high, they throw to the runway, and there is—whatever reason, fog or something like that—we do some holding. But I am not going to increase the number of people holding above a field to improve the shot at the runway.

I find that is what creates unknowns. That is when people begin to run out of gas and have to go someplace else and generate emergencies. We take our holding on the ground, sir.

Senator **Kerry**. I would like to follow up on some of that and ask questions about inspectors, but my time is up for now.

Thank you, Mr. Chairman.

Senator **Ford**. Thank you. Senator Pressler.

Senator **Pressler**. Thank you, Mr. Chairman.

Senator **Ford**. I might add, Admiral, that this hearing today has created such excitement and interest that several of those who are not members of the Subcommittee are present.

So I want you to know that you have excited the Senators by your presence today.

Senator **Pressler**. Mr. Chairman, let me say, first of all, that I think the questions so far have been directed largely towards the larger airports and some of the near misses. I believe there is also a problem that exists in many of our smaller airports.

First of all, let me say that I voted against the Airline Deregulation Act. I think we needed to make some changes, but I have long been critical of some of the things that have been occurring, not only in safety, but regarding the airlines.

I would like to submit for the record by reference an illustrative article from Fortune Magazine, entitled, "The Worsening Air Travel Mess," and a Senate speech I gave on the first day of the 100th Congress, which included an article from Travel Management Daily, pointing out that even Department of Transportation officials are concerned about the effect deregulation has had on airline safety.

Much of this discussion has been on the larger airports, quite properly. But also there are many issues regarding smaller airports, not only in the Midwest, but in Upstate New York or Massachusetts or California, and I want to illustrate that with, using as an example, Aberdeen, SD. It is an example that has been multiplied across the country.

Although we have focused the attention in this hearing this morning on the busiest corridors, smaller-city America faces safety concerns, as well, as in the area of general aviation. Now when the Department of Transportation proposed consolidating its flight service stations several years ago, I was concerned about the impact it might have on general aviation in those smaller airports, but not only in my State, but throughout the country.

We met with FAA officials to express these concerns and were repeatedly assured that there would be no service cutbacks and that none of the existing South Dakota flight service stations would be affected until a consolidation process was complete where the existing of service and safety would be equal to or greater than present levels.

The small communities rely heavily on flight service stations for safety, weather and flight information.

Two years after the consolidation plan was approved, flight service station cutbacks were proposed in South Dakota. After much negotiation, these plans were dropped, but today we seem to be back to square one.

Late last year, the FAA announced plans to cut back service in the Aberdeen Flight Service Station. This is particularly troublesome to me for two reasons, and let me say that it is not only Aberdeen, but there are many others in other States. This could have serious ramifications for air traffic in that area.

We will lose access to real time weather information. We will lose expert ground information regarding local general aviation traffic, and it will make the process more difficult for pilots who want to and should follow correct procedures in uncontrolled airports.

Second, there is no compelling reason for this action and is directly contrary to the past assurances of the FAA.

Now I am certainly not here this morning to pick on the FAA, Admiral. I have the highest regard for you and have supported you in the past.

They have been responsive to our concerns and I have great personal respect, but the fact remains that service levels have been cut and I believe safety has been jeopardized.

Now on paper, you can figure out all kinds of alternatives to the on-sight personnel. Any proposal can be made to look safe on paper, but the fact of the matter is that service has been cut and the airport is not as safe as it had been. Pilots will not get real time weather information. As a practical matter, they will not switch back and forth between radio frequencies to get the information from other sources.

Expert personnel will not be monitoring local radio traffic to help out in emergency situations. The list goes on and on. The point is that safety is jeopardized by these kind of moves and I hope we can correct it.

We will be meeting with FAA personnel on this next week in Aberdeen, and I look forward to discussing this issue and others affecting small community aviation safety with you. We should not lose sight of safety problems in small communities in our efforts to address the overall safety issues.

I guess I would start, Admiral Engen, on the issue of flight service station cutbacks. We were told several years ago we would not have to worry about this problem until the new automated flight service station program was operational, which is still two years off in South Dakota, I believe. Now we are back in this perennial issue of service cutbacks in my State and other States, I understand.

First, is it still FAA policy that there will be no service cutbacks in flight service station unless existing levels of service and safety would be equal to or greater than present levels, and second, would you agree that cutting the Aberdeen flight service station hours by one-half reduces service, or what might have adverse affect on air traffic safety in that area?

Mr. ENGEN. Thank you, Senator. Let me say that I share your interest and concern about the automated flight service station program. It is not a program that I personally made the decision on. But I am dedicated to bring on the automated flight service station. It is our policy that all service must be equal to or better, or greater. I would like to sit down and work with you in real time, to understand the specific concerns you have and I would look forward to that.

With respect to cutting Aberdeen 50 percent, I didn't bring those figures with me, but, you know, we are counting very heavily on automated weather observations systems which are technically capable, not in place yet. We must be very careful that we don't move so rapidly that we do what is of concern to you, and that is of concern to me—and in each case where this is a concern, I will be personally be pleased to come talk and understand this.

We are in a chicken-or-an-egg situation. We need to save money. We need to improve the information flow to the aviation public out there. You can't do that until you begin to make some economy moves that will allow you to get on with it.

We just have to work along. I would be very pleased to come and discuss this with you, sir.

Senator PRESSLER. Yes. On that specific issue, and I don't want to use the Committee time just discussing the specific Aberdeen sitation, but the general question concerning aviation safety in small communities—are we heading for a problem? Are we paying enough attention to safety at uncontrolled airports, with our ever-increasing general aviation traffic? Are we going to see a reduction?

Now in Aberdeen, the times are now from 6 a.m. to 2 p.m., the only time that the people are there. Wouldn't this analogously be a great safety problem—as great a safety problem for some as the problems we have been discussing at the big airports?

Mr. ENGEN. We have 16,000 airports; we have about 325 commercial airports, of which about 22 or 25 fly—from which most of the people fly. But there are a lot of airports out there that don't have tower facilities, which are being operated, based upon proven rules of pattern procedure.

When you lose an ability to have a traffic controller in a tower, I think all pilots sense that as a deep loss. The particular flight service station you are talking about was not a tower, but it was a place where pilots come and file. It did monitor the traffic in the air but they were not literally looking outside to see where the people were in that pattern.

We count on the pilot following the established procedures. That is done safely in many, many airports. I am concerned, just as you are, and we are going to have to monitor this very carefully, but I come back to the policy of equal or better, and I will stand by that, and where it doesn't work, I will take my lumps and we will just have to get on and make things better.

Let me address the critical issue, if I may, Senator Pressler; mid-air collisions. They are of grave concern. 90 percent of the mid-air collisions in the United States occur within five miles of an untowered airport in clear air, sometimes with visibility up to 100 miles, or it could be as low as three miles, between two airplanes, neither one of which are on a flight plan, and both of which are below 5,000 feet.

That is kind of the classic mid-air collision that we have and we need to deal with that, but I want to assure that each—one is too many—but we have averaged over the last eight years about 25 mid-air collisions per year. That is too many, but considering the amount of traffic out there, I think the system is performing very well.

Senator PRESSLER. I would like to ask some additional questions for the record, and I do look forward to meeting with you this week and I will be in touch with you on that specific one. But I think, as you pointed out, a lot of those mid-air crashes do occur at small airports that don't have a tower——

Mr. ENGEN. Yes, sir.

Senator PRESSLER. And I don't know if we can build 16,000 towers—maybe the local towns can—but I do think that having these people present makes it much safer, and I don't know, but I would bet that those crashes occur at times when it is uncontrolled, when there are not traffic control specialists of some kind on the job.

Thank you, Mr. Chairman.

Senator FORD. Thank you. Another new Senator who is here, interested in this hearing, Senator Wilson, California. Senator.

Senator WILSON. Thank you, very much, Mr. Chairman. I am grateful to you for convening the hearing and permitting me to participate in it.

Admiral Engen, I express to you my admiration for your stewardship. You are no newcomer to this business, as you have indicated. Your prior service on the Safety Board is well known. Neither am I a newcomer to a concern—one of the crashes that is frequently cited as the need for the kind of attention that we are currently giving is the San Diego crash.

I was the Mayor of San Diego when that occurred in September of 1978. It was one of the longest days of my life, surveying the wreckage at that site. I note that some of the recommendations that I was invited to submit, not as an aviation expert, but as someone who had experienced that tragedy, the aftermath of that tragedy, have been acted on by the Agency and by Congress since then, but clearly the problem is still with us, even though there are some advances.

Let me ask you some specific questions. I notice that neither in your opening statement, your written testimony or your oral presentation this morning included any observations with respect to the Trust Fund. There are a number of people who think that the Trust Fund should be taken off the budget. I happen to be one.

Does the Agency take any position with respect to that?

Mr. ENGEN. No, sir. It has not, and we look to Congress for guidance in that respect.

Senator WILSON. Let me ask you about the TCAS II and III controversy which you have addressed this morning, and I thought it was clear that you intend, personally, to see that TCAS II be a way station on the way to III, and that the black box that is spoken of, if it be technologically possible, be that way station by virtue of being susceptible of adaptation to achieve the greater protection that the TCAS III system will afford.

Tomorrow we will hear, as I understand it, testimony from the Airline Pilots Association's representatives, and I assume that they will say tomorrow what they have said at a hearing which I held in Los Angeles, with my House colleague, Congressman Anderson, who has a long history in the field of aviation safety. What they said was that they did not trust the TCAS II; that they felt it would give too many false alarms; that apart from that consideration, the limited option that it provided them of vertical avoidance, going up or down, occasioned perhaps equal or greater risk.

What they really said was they wanted to wait for the TCAS III. Now that being the case, my question to you is, is it the Agency's determination, even if it be technologically possible to adapt TCAS II system to TCAS III, to proceed with that in the face of the opposition of those who will have to use the system, those presumably designed to be its beneficiary?

Mr. ENGEN. In a word, yes, but let me qualify that. Those pilots have expressed themselves, and I understand the need to go on to TCAS III and we are going to get there, indeed. We will. But if you talk to them, again, I think you will find—any pilot feels it is far better to go up and down and miss a collision today than it is to wait for three years and turn right or left.

So we have a bird in the hand. What I intend to do, I intend to move forward with that rulemaking, to bring on the TCAS II, make it a requirement; work with the avionics manufacturers as closely as we can to be sure we leave the card slots, or whatever is required in the circuitry in the black box, to upgrade the II to TCAS II; continuing the TCAS III, limited introduction program of which we have some $3 million in the 1987 budget, and we have additional monies in there for 1988 already, at the end of 1988, certify that TCAS III and move on to TCAS III. That is my plan.

Senator WILSON. How soon will you be able to state with certainty whether or not your expressed hope that the TCAS II system is adaptable, to be made into a TCAS III? How soon will you know whether that is possible?

Mr. ENGEN. I think we will know late 1988; at the very latest, in 1988. I think probably no sooner. If we just begin those discussions now. You know, I think you have to take a valuative approach. Do you have a 50 percent assurance, do you have 100 percent assurance? We will come up with that.

Senator WILSON. Can that knowledge and that certainty be gained earlier by an accelerated rate of expenditure, or is the constraint technological?

Mr. ENGEN. No, sir. It is technological constraint. It is developing the algorythyms and the software to provide the assurance that that box you put in that airplane is going to be 99.99999 percent correct. We cannot afford to put something into an airplane which we think is going to work.

If I say so, Senator Wilson, the feeling, in discussing with pilot groups, and I wouldn't just cite ALPA, but the feeling that I get in discussing with pilot groups is that that is probably why we haven't got a TCAS in being today. There is a community that is saying, well, let's wait a little longer. Let's wait for two or three more years and get what we really want and then we will develop it.

That two or three years could become four, five or six years because of technology. I am saying, let's grab that bird in the hand and let's get on with it and let's get about this business.

Senator WILSON. Let me ask you a question about the Los Angeles TCA. I know that the Agency is planning to expand and simplify TCAs surrounding the major airports. You have said that there will be 23 rather than the present Class 1 and Class 2. As it relates to the Los Angeles area, in the new regulations that deal with the five largest airports within the Los Angeles area, how will you deal with the very large number of smaller commuter airports in the area, including some that are towerless?

I was particularly struck by your comment a moment ago that 90 percent of all mid-airs occur within five miles of towerless fields?

Mr. ENGEN. I think we have to look at it very critically and certainly what the Western Pacific Regional Director for the FAA, Dr. McClure, has done in looking at the Los Angeles Basin has been very dynamic. We are treating it as a special area to draw into being procedures that will prevent that tragic accident at Cerritos.

We are simplifying the TCAs as you have said. There are fields in there in which—there are untowered fields in there. We need to look critically at those. Those airplanes have to find a place to go. Do they go to Antelope Valley, do they go to Ontario, do they go to Santa Paula?

We are going to have to look at this very carefully because we are dealing with air commerce and I want to be sure that we do this very pragmatically and that, in our haste, that we don't create a situation that is wrong. So the first goal is to have that TCA well defined, to enforce the rules of the TCA, which we are doing today, and to provide safe separation in there by requiring people to have Mode C encoding altimeters.

Senator WILSON. Will the installation of Mode C transponders is all general aviation aircraft produce an overload on the Agency's computers in the Los Angeles area?

Mr. ENGEN. It will not. If every single airplane filed a flight plan and we had to track that airplane as a IFR blip, it would overload. I believe. That is a value judgment.

But what we are counting on, is we are counting on that transponder with the Mode C altitude mark out there to provide where this airplane is and that we will take the IFR traffic away from it, and we can also be talking to that individual VFR blip out there, as well.

Senator WILSON. As I understand it, Agency regulations require that any transponders that are to be installed after January 1, 1992, will have to be of the Mode S type?

Mr. ENGEN. Yes, sir, that is right.

Senator WILSON. If that is the case, why not mandate the general aviation aircraft install the Mode S transponders now instead of the Mode C?

Mr. ENGEN. It really doesn't make that much difference. The Mode C really provides us with what we want. We don't have black boxes out there to buy right now. The Secretary is just announcing the Mode S rule, which virtually does the same as the Mode C encoding altimeter does, but it does provide the ability later on for data flow.

Senator WILSON. Data link.

Mr. ENGEN. Data link, if you will. That is the upgrade. But either the Mode S transponder which will be required after January 1, 1992, or the Mode C encoding altimeter will provide the same critical data.

Senator WILSON. Is there going to be a significant difference in cost to the owner of the general aviation aircraft?

Mr. ENGEN. I think the Mode C encoding altimeter is coming down in cost. I think the Mode S transponder will be more expensive, and it is just like the ELTs that we bought. It is just like the VHF sets that we bought; just like the VORs we bought; with serial production, it comes down until it is an affordable quantity.

Senator WILSON. Mr. Chairman, if I may I would like to include a couple of additional questions to Admiral Engen for the record.

Senator FORD. Without objection, I am sure the Admiral would be delighted to entertain any written questions that you might submit to him.

Senator Gore.

Senator GORE. On December 3rd of last year, there was a fatal crash in Jamestown, TN, of an emergency medical helicopter. The pilot, two nurses and a patient were all killed. Later that same day, another medical helicopter, this time in Pendelton, OR, crashed, killing the pilot, a paramedic and a nurse.

I was contacted by the widow of the pilot in the Jamestown crash and in looking at the statistics involving crashes of medical helicopters in this country, I was amazed that the FAA has not done anything in this area.

This year, on January 8, there was yet another crash in North Carolina, this time killing three crew members and one three and a half month old patient. Two hours later, there was another helicopter crash.

Now, this is a very valuable service that saves lives, of course. We all support it strongly. We don't want to burden it with unnecessary regulations. But these programs have to operate safely.

Many of the pilots with whom I have been in touch with tell me that time is overripe for action by the FAA. The accident rate is outrageously high. If I am not mistaken, Mr. Engen, the commercial aviation accident rate is .004 fatal accidents per 100,000 flight hours. In this case, am I correct in stating that the accident rate for medical helicopters is 1,500 times as high as the commercial aviation accident rate?

Mr. ENGEN. Senator Gore, I can't talk to you in those specifics.

Senator GORE. Is it 6 per 100,000?

Mr. ENGEN. I don't have those figures before me and I would like to provide them.

[The following information was subsequently received for the record:]

The accident rate for rotorcraft is 8.6 per 100,000 flight hours. Currently, the FAA does not process Emergency Medical Services (EMS) flight hours and cannot statistically compare the EMS accident rate with the commercial accident rate.

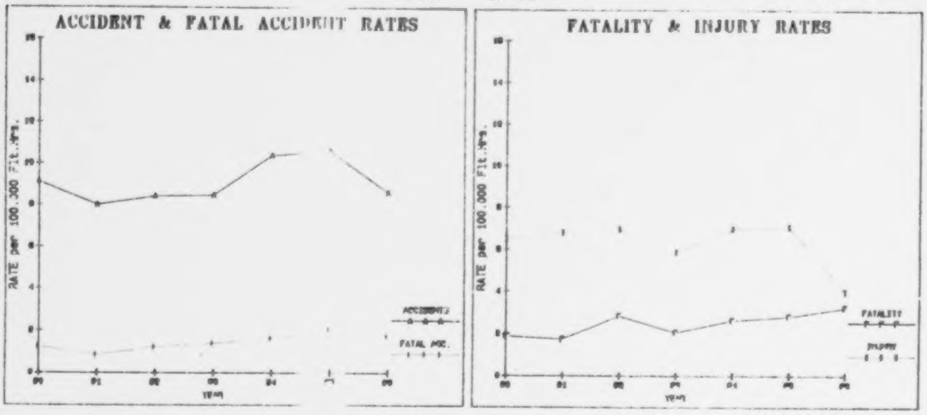
Since 1984, EMS accidents have doubled each year as follows:

1984	3
1985	7
1986	15

FAA and the rotorcraft industry, including operators, are participating in ongoing series of meetings to discuss EMS and rotorcraft statistics. As a result of these discussions, we anticipate obtaining an estimate of EMS flight hours. Once we have that estimate we can make a statistical comparison of the commercial and EMS accident rates.

FIGURE 26

ROTORCRAFT RATE STATISTICS
1980 - 1986


ACCIDENT & FATAL ACCIDENT RATES

FATALITY & INJURY RATES

TABLE 12

YEAR	TOTAL FLT. HOURS	TOTAL ACCIDENTS PER 100,000 hrs.	FATAL ACCIDENTS PER 100,000 hrs.	FATALITIES PER 100,000 hrs.	INJURIES PER 100,000 hrs.
1980	2,338,370	9.11	1.24	1.88	6.50
1981	2,686,139	8.00	0.86	1.75	6.81
1982	2,355,611	8.41	1.23	2.84	6.96
1983	2,280,037	8.46	1.40	2.06	5.88
1984	2,503,301	10.39	1.64	2.64	6.99
1985	2,160,322	10.60	2.04	2.82	7.08
1986P	2,406,000	8.60	1.75	3.24	3.99

Source: Accidents, Fatal Accidents & Fatalities are from NTSB 1/9/87.
Injury data is from AIDS data base. P = Preliminary

Senator GORE. That is the second straight year that the accident rate has been 6 per 100,000; the second straight year that the rate has been 15,000 times as large as the accident rate for commercial aviation.

Wouldn't it be accurate to say that such rate is alarmingly high and without any precedent?

Mr. ENGEN. It is too high, and we are focusing on it. It is an area which we must control.

We have to realize, as well, that in that same period there may be 10,000 people who have been saved by these helicopters moving about. I don't do any other than put that out there.

Senator GORE. I don't quarrel with that, Mr. Engen. We all want to see this service mature and grow and be used, and be more widely used. They save lives. But they are now operating in a way that these statistics indicate is extremely unsafe. There is no precedent I am aware of for any aviation activity that even approaches this kind of fatal accident rate.

Mr. ENGEN. Let me agree with you and at the same time say parenthetically that we are dealing with human factors here, and you are right. But what happens, it gets into the mind of a pilot, there is an injured, wounded or seriously ill person in the back of the helicopter. He is driven to get that person through bad weather. They literally almost kill themselves in trying to get the job done. That is the mentality we have to get to.

It is very difficult to tell a pilot, or get a pilot to admit—this is not safe. I have to stop here and let that person die.

Senator GORE. Mr. Engen, with all due respect, I am sure that that is a causal factor in creating the problem that we are discussing here. But to make that the principal explanation for this outrageous accident rate completely misses the point and abdicates the FAA's responsibility.

Now I looked at your regulations. You put out new regulations in October of last year, governing emergency medical helicopters. You loosened the regulations as compared to commercial aviation and set it up so that they can work a 72-hour shift being constantly on notice. You know yourself that I had hearings on the House side about the effect of sleep deprivation and jet lag on pilots, and you know the correlation between these schedulings of the airlines when pilots don't get enough sleep, when they are constantly on notice, up in the middle of the night.

Now, the fact is there are competitive pressures in this business. There are 38 vendors competing for the helicopter business. The oil industry used to be their biggest client. Now with the problems in the oil patch, that is not available any more.

Since all of the vendors operate with the same fixed costs, the cost of the equipment, the variable costs turn out to be staffing. In Canada, they require that each craft be allotted nine pilots who are instrument-current. In our country, we have a situation where the shifts are very long and we have staffing with three pilots, or two, and in some cases, even one.

I figured out the duty time for a three-pilot program. If you translate it into a 40-hour work week, those pilots are required to work the equivalent of six weeks a month. During the two pilot-programs, the pilots are required to work the equivalent of nine weeks per month.

They cut back on the equipment that is put on the plane. They cut back on the training of the pilots. They try to get by with too few pilots, and you allow them to do all of this. You are not responding to it.

In Canada, where they have tougher requirements, no accidents have occurred. They have had no accidents at all.

The FAA, here in this country, liberalizes the standards and lets them have longer shifts compared to commercial aviation pilots, in spite of the fact that the accident rate is 1,500 times as great as commercial aviation. Now, are you falling down on the job here?

Mr. ENGEN. No, sir. I am not. But let me assure you that I am going to do anything that is necessary to continue to improve the safety in the system. I wouldn't ever fall down on the job, to try to do that.

We are looking at all the operators. We have gone out to our regions, to identify the operators, and see how we can bring them under Part 135 operation. We do need control and I wouldn't argue with your facts one bit, Senator.

It is an area in which we need to look.

Senator **Gore**. Why did you liberalize it?

Mr. **Engen**. It is a very small segment of aviation. An extremely small segment of aviation, which we are going to look at in excruciating detail.

Senator **Gore**. Well, it is not small to the families of these people who have been killed in these crashes. I want to know why you liberalized the safety requirements in October of last year, in the teeth of two straight years of an unprecedently high accident rate? Why did you liberalize the requirements?

Mr. **Engen**. I can't give you a direct answer, why they were liberalized. But I can say to you, sir, that when you talk about working six weeks out of fours weeks, that theoretically may be possible, but——

Senator **Gore**. That is on the basis of a 40-hour shift. You understand what I am saying. If you allow them to be on constant call for 72 hours at a time, and if you allow the hospitals to get by with having only two pilots allotted per craft, they are exploiting these people and the pilots. These crews are naturally going to push themselves to their human limits and beyond in order to save lives.

That is the kind of people that they are, but that is exactly why we have a Federal Aviation Administration, to prevent hospitals, operators of aircraft and others from going beyond safe limits. And if hospitals competing with one another to offer this service are tempted by these liberal requirements to go beyond the bounds of safety, that is, again, an argument why you need to step in and not liberalize the requirements, but rather to have sensible requirements, the way Canada does, for example.

Mr. **Engen**. Let me assure you, Senator Gore, it is an area which I am familiar with. It is an area in which we will move forward and work on. I would be very pleased to continue the discussion, to get the benefit of your views, but we are going to solve the problem.

Senator **Gore**. Mr. Chairman, I would like to thank your staff for helping me compile some of these statistics, and I look forward to working with the Subcommittee later this year on the problem. Thank you.

Senator **Ford**. I thank the Senator.

Admiral, you have been here two and a half hours, and I think you have covered the gammut almost of everything that could be under the control of the FAA. I will be glad to revisit some Senators if they have additional questions.

Senator **Pressler**. I will submit mine for the record.

Senator **Ford**. There will be some questions for the record. You were straightforward, you have a good recall. That indicates that you are interested in what you are doing and doing it in detail, and I am amazed at how you have responded here today and I want to compliment you for that.

We all look forward to working with you. It seems, Admiral, too, that of the 20 members of this Committee, we had 12, I think, or maybe more, here to visit with you this morning and that is highly unusual.

I know Senator Kassebaum, who was Chairman and is here with us today, found some of the hearings rather lonely. So, we are glad to have this kind of interest and this kind of enthusiasm and we admire your patience and we do thank you for being here today. I look forward to continuing our association and working together.

Mr. ENGEN. Thank you, very much, Mr. Chairman.

[The statement follows:]

STATEMENT OF HON. DONALD D. ENGEN, ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE: I welcome the opportunity to appear before the Subcommittee to discuss the topic of aviation safety.

At the outset, I would like to make clear my firm conviction that our airways today are safely operated. The American travelling public continues to receive the highest level of air safety in the world, and the U.S. continues to serve as the air transportation model for the world aviation community. Our system for all of its outstanding features, however, depends on human factors and is not perfect. No system is. That is why the FAA exists, and why this Subcommittee provides oversight—to find ways to make an outstanding system even better. Today, I would like to briefly describe for you the level of safety provided this past year by our air transportation system, and then highlight a few areas where I believe we need to continue to focus additional efforts to achieve safety improvements.

This past year proved to be one of the safest in the history of aviation. During 1986, there were no fatal accidents on any of the U.S. major airlines. Scheduled air carriers as a whole experienced the lowest fatality rate in the past six years. The commuter airlines had the lowest accident rate and the lowest number of fatalities since their inception. Charter carriers had no fatal accidents throughout the year. The only significant accident involving a U.S. scheduled carrier, other than commuters, was a cargo aircraft accident in which there were three fatalities. The general aviation accident record also reflected a positive trend by setting a record for the lowest accident rate and number of fatal accidents. Because of the way safety statistics are kept by the NTSB, the midair collision of a Mexican airliner and a U.S. private aircraft is counted as a general aviation accident. Even counting this accident, general aviation showed a decrease in fatalities for 1986.

Last year's safety performance is one in which everyone in the aviation community can be proud. A positive achievement such as this can result only from intense efforts and a dedication to safety from each segment of the aviation community. I would say once again, aviation safety is a shared responsibility. The FAA establishes rules, enforces compliance, and operates the air navigation system, but it is those who fly and maintain aircraft in the aviation system that really establish safe operating performance. Consequently, to achieve high levels of safety, it requires that every segment of the aviation community demonstrate a strong commitment to safety. The FAA is the agency charged with responsibility for keeping that commitment to safety as high as possible.

In discussing the safety record achieved in 1986, I would never imply that our job is done. Clearly it is not. Equally clear to me is the fact that a one-year safety record does not fully reflect the overall safety of our air tranportation system, since the system and its users offer such a high level of safety that a small number of incidents can drastically change the safety record from one year to the next. Therefore, I believe it is important to look at the safety afforded in the system over a longer period of time. Givern the focus that has frequently been given to the relationship of airline deregulation and safety, I believe it worthwhile to contrast the timeframe immediately before deregulation with the safety record in the deregulated era.

For the 8 years prior to the Airline Deregulation Act (1971 to 1978), the accident rate in commercial aviation per 100,000 flight hours was 2.34; the fatal accident rate was 0.51. In the 8 years following the Deregulation Act, the accident rate fell to 1.65 and the fatal accident rate dropped to 0.36. This same improving trend holds true for virtually all facets of aviation, including the commuters, unscheduled operators, and general aviation.

The actual safety record post-deregulation has been a distinct improvement over the years prior to deregulation. A clear trend emerges: despite a rapidly transitioning aviation environment, despite steadily increasing traffic, and despite what is perhaps a heightened public awareness and sensitivity to aviation safety, the safety record of the system has steadily improved. This has not been by luck. It has been accomplished through hard work by all segments of the aviation community, and that same spirit along with the FAA's watchful eye will continue to provide the travelling public with the highest levels of safety afforded anywhere in the world.

Last week, Secretary Dole announced a comprehensive drug testing program intended to promote safety in all facets of transportation. For employees within the Department of Transportation, the program includes extensive drug awareness and education campaigns; drug testing of Departmental employees in critical safety and security positions whose functions have a direct impact on public health and safety, the protection of life and property, or national security; and the opportunity for rehabilitation assistance. Employees in critical safety and security positions, which in the FAA would include such groups as air traffic controllers and aviation safety inspectors, will be subject to pre-employment, random, reasonable suspicion, and accident or unsafe practice testing. The Secretary also announced that employees whose jobs require periodic medical examinations will be routinely tested as part of that procedure, and all other DOT employees will be subject to post-accident testing and will continue to be subject to reasonable suspicion testing.

Secretary Dole also indicated that rulemaking efforts concerning pre-employment, post-accident, and random testing will continue for commercial airline pilots and crew, and other employees directly responsible for the safety of flight operations. Moreover, her policy contemplates that periodic testing will be required for those who are required by FAA regulations to have annual physicals.

During the past year, we began to reap some of the fruits of many earlier efforts we began to improve our safety programs within the agency. For example, one of the areas in which I have devoted substantial effort has been our inspection program. Last year, we experienced dramatic improvements in that critical program. Our efforts to increase the staffing of our aviation safety inspector workforce resulted in a solid increase in staffing over fiscal year 1985. Our aviation safety inspector staffing at the end of the fiscal year was 11.4% higher than in 1985, increasing to 1,813 aviation inspectors. This year we are authorized an additional 222 positions in inspector and support staffing over FY 1986.

Both our training programs and program guidance for our inspectors saw improvement in 1986 as did our method of assigning work to these individuals. We became much more focused and structured in our efforts to oversee the entire industry. Our inspection program was targeted at key areas within the industry, and, by establishing inspection goals on a national basis, we were able for the first time to assure that every facet of the industry was inspected by the FAA during the year. In short, the planning and refinements we began several years ago manifested themselves last year in tangible improvements in our inspection efforts, although more remains to be done.

We also continued our policy of strengthened enforcement to help ensure that each segment of the aviation community will achieve greater compliance with our safety regulations. During 1986, we initiated 63 actions to suspend or revoke air carrier certificates. We also initiated against air carriers civil penalty cases amounting to nearly $15,000,000 during that same time. We have bolstered our enforcement actions against unauthorized incursions into terminal control area airspace, to enhance compliance by general aviation pilots in this critical area. We have launched a major pilot education program called Back-to-Basics. All of thes measures contribute toward a safer system. We will continue to strive for greater safety compliance by administering our regulations in a firm, evenhanded way.

In the air traffic area this past year, we handled more traffic at our en route centers than ever before. In 1986, operations at our continental en route centers increased 5% over 1985. Whereas in 1981, we achieved a record by having one day in which operations exceeded 100,000 at our centers, we had 163 such days last year. Operations at our 22 pacing airports were up 4% over 1985. On the downside, however, delays were up this past year over 1985, increasing from 294,975 at our 22 pacing airports to 367,464. Although still unacceptably high to me, the increase in delays was relatively modest for the growth in traffic we have experienced since 1984 contrasted with the delay problems we experienced then. Comparing delays at these pacing airports from 1984 to 1986 indicates that traffic climbed by 560,294 operations over that time while delays only increased by 4,351.

On the topic of delays, I would add that I am intent on finding additional ways to help mitigate the problem. I know that delays are of a magnitude now during bad weather that they are both frustrating and burdensome to the airlnes and passenger as well. Projections for the next decade indicate that this problem will worsen to an intolerable situation, if not resolved. I can assure you, that we will take active measures to deal with this problem. For example, we convened a group of air traffic control facility managers last month to assess a variety of recommendations developed by the Air Transport Association to deal with delays, and to develop recommendations on their own. In February, we will convene a meeting of over 100 air traffic control specialists and traffic management officers to review the smaller groups efforts and to develop a strategy for dealing with traffic in the Summer of 1987. A significant element of this process will include a more detailed assessment of the ATA proposals and recommendations to headquarters on those proposals. Our foremost priority in developing means of reducing delays or in accommodating delays which do occur in the system must be to ensure that the system remains safe, and I can assure you that we will not permit any action to interfer with the safety of the system.

We also have worked toward additional capacity improvements in our airport system through grants provided under the Airport and Airway Improvement Act of 1982. In FY 1986, we provided $170.9 million in grants for capacity-related projects, such as runway improvements, at 299 airports. We view capacity improvements, in addition to helping reduce delays, as a means of ultimately enhancing safety by helping to reduce congestion.

We also saw an increase in the number of pilot-reported near midair collisions (NMACs) this past year, which is our second year of full reporting. The total of such reports increased from 758 to 828. Despite this apparent increase, however, there were some positive areas of improvement for 1986. I want to stress, though, that this review of 1986 data is preliminary since not all reports have been closed from 1986. One area of improvement concerns the percentage of *critical* reports, which predominately are those with less than 100 feet of separation between aircraft. These critical reports declined from 23.7% of reports filed in 1985 to 20.9% last year. In another positive trend, it appears that the number of *no hazard* reports, which are those reports which realistically do not represent any threat of a potential collision at all, increased significantly in 1986. Subtracting the total no hazard reports from the total number of NMAC reports for 1985 and 1986, respectively, indicates that the number of realistically potential NMACs is virtually the same for both years. Also, with the increased flight hours flown in 1986, the actual rate of NMACs in these categories shows virtually no change. Preliminary data also indicates that the rate of NMACs involving two air carrier aircraft per 100,000 air carrier flight hours has remained unchanged at .27. This is not to say that I am in any way satisfied by these numbers, even with a few positive indicators. More clearly remains to be done by the FAA and those pilots flying in the aviation system to address the potential for midair collisions.

One key program we have been pursuing as a means of reducing the threat of midair collisions has been the Traffic Alert and Collision Avoidance System (TCAS), which is a collision avoidance system that will work independently of and as a back-up to the air traffic control system. We have made significant progress with TCAS II, which will provide traffic advisories to pilots and will tell pilots what vertical maneuvers to undertake to avoid another aircraft when there is a conflict. TCAS II is now in the implementation phase of development. During this past year, we certificated a prototype TCAS II for operational evaluation in a Piedmont B-727. We also continued our efforts in the Limited Installation Program (LIP), which is proceeding simultaneously with the Piedmont effort. Under the LIP program, 14 TCAS II commercial quality units will be manufactured by Allied Bendix and Sperry/Dalmo for installation in United and Northwest Airlines aircraft. Flight evaluation under this program is expected to begin in May 1987. As I announced last September, I intend to issue a Notice of Proposed Rulemaking (NPRM) later this year to propose the requirement that TCAS II units be carried by air carriers.

In the meantime, we are continuing our efforts with respect to TCAS III, which will provide both vertical *and* horizontal traffic resolutions. We initiated engineering flight tests of TCAS III at our Technical Center in Febraury 1986, and conducted a series of flight tests in the Los Angeles Basin area to determine operational characteristics in the highest air traffic density. These tests led to improvements in the threat evaluation and maneuver selection logic, which is being tested in current flight tests. We expect performance specifications to be completed for TCAS III in September 1987, and anticipated that improvements offered by TCAS III will be easily adaptable to TCAS II.

We continued our progress in restaffing our air traffic control facilities last year. Systemewide our on-board full performance level controlled staffing had increased by December 31, 1986, to 9,555, up 1,030 from December 1985, and our overall controller workforce had grown to 14,805. In another positive vein, for the second year in a row, we have achieved reductions in the number of operational errors by our air traffic facilities, although there was an 11.7% increase in surface errors. From 1985 to 1986, operational errors declined by 13.3%. Operational errors in the en route environment dropped by 18.2%, and in the terminals by .7%.

On the whole then, we achieved very positive results last year. But as I noted earlier, we need to strive for an even better system by continuing the strong momentum we have initiated. Let me elaborate on that point by citing some of the areas where we will continue to focus attention this year.

First, we need to continue our building program in the flight standards area by completing the recruitment and initial training of new aviation safety inspectors in order to achieve the appropriate staffing complement within the agency. I also will be watching to see that we continue the key progress we have made in programming our resources in a way that achieves maximum surveillance of the entire aviation industry. We must continue placing our valuable human and fiscal resources where they will do the most good in behalf of the travelling public. I am pleased with the new programs we got underway last year to revitalize our flight standards area, but we will need to continue monitoring the many changes we have in process to see that the "products" of these programs come on line in a timely way and to ensure that we make real-time changes to these programs to reflect added experience and knowledge on our part. With the dynamic aviation industry we have today, the FAA cannot afford to let an imbalance occur again in terms of safety personnel nor can we afford to lose sight of changes occurring in the industry.

We also must continue to address the training of our air traffic controllers in our facilities throughout the country. Not all facilities have recovered as quickly or as well as others have from the 1981 strike. With expectations of increasing traffic in the future, we must always look ahead in our planning. Additional controllers will help meet that need. Further, by bringing additional controllers up to the full performance level, particularly in selected facilities, we can enhance management's ability to schedule controllers for peak periods and ease the burden on some of our controllers who, in some cases, are working more hours than they would like. Therefore, we will continue to devote significant efforts toward the training of controllers. This month, there was a midair collision just south of Salt Lake City. That tragedy highlights, as do subsequent occurrences, the need to dedicate ourselves in every way we can to reducing the threat of midair collisions. In that regard, I remain concerned about the number of near midair collision reports. Last year, I initiated a study of our terminal control areas (TCAs), the airports where the greatest number of air carrier operations are conducted. We are taking steps in response to that effort to reduce the complexity of TCAs, to standardize the equipment required in TCAs, and to make TCAs more recognizable by pilots who want to avoid the congested airspace encountered there. This effort must continue on in a timely way, as it will contribute to the safety of the terminal area airspace. We must, also, continue to find other solutions, whether operational, procedural, or equipment-oriented, to further reduce the threat of midair collisions anywhere in our domestic airspace. Clearly, one significant aspect of this will be the implementation of TCAS II, which will offer significant safety benefits to airspace users. Therefore, this program will continue to occupy a high priority with me.

We also are continuing our efforts to drive down operational errors. This is perhaps the best measure of how our controllers are performing. I have devoted significant effort to the problem of reducing "surface" errors. We remain committed to reversing the trend of increasing surface errors, and will focus additional time and resources on this problem during the course of this year.

Lastly, we are looking at ways, including as I noted the ATA proposals, in which delays may be reduced. Unfortunately, the lack of adequate numbers of runways and little likelihood of much change in this key area make this a vexing problem. Further, it should be noted that the majority of delays are caused by bad weather conditions, and not by shortcomings in our enroute system. A major facet of the delay problem has been scheduling by the airlines. There has been an unfortunate tendency for airlines to overschedule departures and arrivals during peak times, which inevitably results in a failure to meet the published schedule. Notwithstanding the difficult nature of dealing with delays, we are addressing the problem of delays in a variety of ways, including the provision of technical assistance by specially constituted teams, and hope to achieve some progress this year.

In closing, Mr. Chairman, I want to reiterate my view that our air transportation system is working well, but not perfectly. We cannot be content to dwell on the success of last year. We must address the problem areas we know about, and we must be vigilant in ferreting out other areas where problems may occur. I am confident we are on course, and look forward to the continued support of this Subcommittee in helping us to achieve additional safety gains.

Mr. Chairman, that completes my prepared statement. I would be pleased to respond to questions you and Members of the Subcommittee may have at this time.

[The following information was subsequently received for the record:]

QUESTIONS OF SENATOR FORD AND THE ANSWERS

Question 1. The Congress created Senator Byrd's Aviation Safety Commission to conduct an independent review of aviation safety. It has been almost four months since this legislation was approved. Names have been floated, but nothing formal has happened. When will the President appoint the members to this Commission?

Answer. On March 12, 1987, the President announced his intention to appoint to the Aviation Safety Commission the following named individuals: S. John Byington, Joseph P. Kalt, Michael E. Levine, Russell W. Meyer, Jr., John E. Robson, and Thomas W. Wathen. As the Subcommittee is aware, the nomination of such individuals is outside the FAA's authority.

Question 2. What is the definition of a Full Performance Level controller used by the FAA today? What was the definition used prior to the strike? Why were changes made to this designation?

Answer. The FAA's method of tracking and defining FPL controllers has not changed. On the national level, controllers are tracked through an automated system which identifies as FPL's those controllers in a given facility who are at the journeyman level for that facility (i.e., in our busiest facilities, GS–14 controllers would be identified by the automated system as FPL's). For internal day-to-day facility mangement purposes, however, our facilities track as FPL's those controllers who have attained both the journeyman grade in their respective facility, and have been certified on all of the positions of operation in their assigned area. We have not changed our method of tracking FPL controllers since any change in this approach would cause confusion in our tracking system and limit our ability to compare current work force data against historical data.

Question 3. You stated at the hearing that you were not counting Air Traffic Assistants toward the congressional mandate of having 70 percent of the controller work force system-wide be Full Performance Level. Yet, you count ATA's toward the total number of FAA controllers. How can you justify this inconsistency? When was this decision made? What is the justification for taking this approach?

Answer. Air Traffic assistants are categorized in the controller work force because they perform work that is in direct support of the air traffic controllers. Before the strike, full performance level controllers (FPL's) were performing the kind of work that the ATA's now perform. ATA's do not count toward the mandate of having 70 percent of the controller work force qualified as FPL's controller staffing specifies that: "With respect to the air traffic controller work force, of those individuals eligible to be full performance level controllers, 70 percent shall have achieved full performance level. . . ." Air traffic assistance are not eligible to be FPL's. The 70 percent calculation is to be based on those who are eligible to be FPL's. Therefore, ATA's are excluded from the 70 percent goal.

Question 4. Your former Deputy Adminstrator, Richard Jones, has said publicly that he believes that the FAA should impose a "moratorium" on all growth in airline traffic because the "air traffic control system is just about saturated." What is your reaction to this statement, especially in light of the fact that it comes from someone who knows the system better than most observers?

Answer. I am sure that many of you share my respect for Dick Jones, and one of the signs of that respect is the ability to disagree with certain of his positions without compromising my high regard for him.

The Airline Deregulation Act removed many of the Government imposed restraints on air travel in the United States, including which routes airlines may serve and how much they could charge for tickets. Since that time, the growth in the aviation industry has been dramatic. While it is true one of the consequences of this growth is that many airports, particularly those serving as airline hubs, have reached or exceeded their capacity during certain peak periods, I do not believe this warrants a moratorium on all growth in airline traffic, and a subsequent return to a regulated aviation environment.

A goal, I have stated many times, is to match system capacity to system demand. We are not there yet, but improvements are being made in air traffic control procedures. And I would stress that we will not sacrifice the high safety of our air traffic control system to meet demand. In that regard, our system is designed to hold traffic on the ground rather than stretching our capabilities to unsafe limits. Phase One of the Expanded East Coast Plan has been implemented with encouraging results. Our controller work force is continually gaining valuable experience. We are aggressively working with the airlines to let them know they have a major stake in helping us resolve our common problems, and that the FAA cannot do it alone.

For short term relief during the Summer of 1987, the Department of Transportation granted limited anti-trust immunity to airlines with a view toward adjusting schedules at several airports, spreading out demand, and reducing flight delays. These meetings were held during the week of March 16 and will resume in mid-April. Some progress was made in spreading out flights during peak demand periods. Given the operation of the hub and spoke system, we certainly do not expect to eliminate all schedule peaks. However, we will continue to work with the airlines to reduce the impact of schedule compression.

Question 5. On February 6, the National Transportation Safety Board issued Safety Recommendations A-87-3 through A-87-7 regarding air traffic control procedures at Chicago O'Hare International Airport. Specifically, these recommendations addressed operational errors and near-misses that continued to occur at and near the airport. Would you please discuss each of these recommendations, as well as the FAA's specific responses to each of them?

Answer. NTSB Safety Recommendations A-87-3 through A-87-7 were issued by the National Transportation Safety Board (NTSB) on February 6, 1987. The FAA has either already completed or initiated action to resolve the safety issues raised by the NTSB. The formal response on the FAA's action in these matters is due, by law, to the NTSB on May 6, 1987.

The subject safety recommendations are all the result of a NTSB investigation of air traffic control (ATC) operational errors at the Chicago O'Hare International Airport control tower in 1966. Two recommendations, A-87-3 and A-87-6, call for better training and quality control programs at the Chicago O'Hare ATC facility. Specifically, the recommendations state:

"A-87-3. Implement an improved and more effective air traffic controller training program at the Chicago O'Hare Air Traffic Control Facility to train developmental controllers to achieve the full performance level rating in a timely manner.

"A-87-6. Review the Quality Assurance and Training Program at the Chicago O'Hare Air Traffic Control Facility to make sure the objectives of the program are met and the assigned staff is used effectively to support the program."

The FAA conducted three separate evaluations of the operational activities at the Chicago O'Hare Air Traffic Control Facility. A comprehensive program to address the findings of the evaluations was developed and set into motion in September 1986. Several actions specifically addressed the training programs at Chicago O'Hare. Two seminars were conducted in September 1986 by the facility manager for the staff and supervisory personnel. The objective of the seminars was to reinforce their respective roles and responsibilities and to clarify standards for on-the-job training and position certification procedures. Staff personnel who had been controlling traffic were returned to their primary duties in the Training and Quality Assurance Departments.

The training requirements are being supplemented by staff personnel on temporary assignments from other areas of the facility.

To manage the training program more closely, the training program has been revised to establish separate training staffs for the tower and for the radar facilities. Both of these units are staffed fully, and will remain at a full staffing level in accordance with training requirements. The training staffs are placing very heavy emphasis on standardized training and certification procedures. This emphasis includes increased use of tape talks, position relief checklists, standard phraseology, position recertification, and various quality assurance topics.

The training program has an established goal of providing 2 hours of training per development controller per shift. This objective is being accomplished by increasing the use of overtime for training purposes.

Despite this extensive emphasis on training, the O'Hare training programs will not sacrifice quality for expedience. The objective of the program is to bring developmental controllers to the full performance level in a timely manner. However, the progress of each individual will be consistent with proper levels of attainment, facility workload requirements, and, above all else, safety.

Safety Recommendation A-87-4 states:

"A-87-4. Review its personnel selection and promotion programs at the Chicago O'Hare Air Traffic Control Facility to make sure that applicants have previous experience working in a tower cab to qualify for selection to a supervisory air traffic control position in the tower cab."

The FAA does not agree with this recommendation. The personnel selection and promotion programs have been reviewed with respect to the selection of supervisory air traffic control personnel. The lack of previous tower experience should not disqualify an individual for supervisory positions in the tower. In fact, the nature of the O'Hare tower—a limited radar approach control facility which is associated with a Level 5 TRACON—makes it efficient for a new supervisor to have experience in the radar facility and the Air Route Traffic Control Center. The FAA is reluctant to disqualify a successful radar controller from a supervisory position simply because the individual has not had previous tower cab experience. Qualification as a tower cab supervisor is incumbent entirely upon the individual completing successfully all of the required training on the various tower cab positions. In the case of the supervisor cited in this recommendation, he had 16 years of previous center and TRACON experience before bidding into a supervisory position in the tower. He successfully completed 185 hours of training on ground and local control positions. This training includes 105 hours of on-the-job training. The effectiveness of the selection and promotion programs cannot be evaluated without considering the requirements of the training program and quality assurance program. The results of all the programs have been to ensure safe air traffic control services and proper supervision and management at the O'Hare facility.

The FAA believes that the selection and promotion programs at the Chicago O'Hare Air Traffic Control facility are efficient and provide the measure of flexibility necessary to meet staffing requirements of the facility.

Safety Recommendation A-87-5 states:

"A-87-5. Review the methodology used to establish airport Engineered Performance Standards and the criteria used to establish the "High Density Rule" at the Chicago O'Hare Air Traffic Control Facility to ensure that air traffic controller staffing levels and performance limitations are accounted for appropriately and that the air traffic controller team capabilities are not exceeded during peak traffic periods."

The Engineering Performance Standards (EPS) and the High Density Rule at Chicago O'Hare International Aircraft were reviewed in 1984. The requirements of the rules are inherent in scheduling practices of users. Additionally, daily traffic loads are controlled by air traffic management processes, which include consideration for airport conditions, runway configurations, controller availability, weather, and other factors. The sum of these elements is the management processes which operate at the O'Hare facility on a day-to-day and hour-to-hour basis. This process does consider both controller performance and capabilities. While the FAA is confident that the existing criteria used to establish the High Density Rule as it applies to O'Hare Airport provide safe and efficient air traffic services, the FAA will review this criteria with respect to the intent of this recommendation.

Safety Recommendation A-87-7 states:

A-87-7. Regularly monitor the Quality Assurance and Training Program at the Chicago O'Hare Air Traffic Control Facility to require that air traffic controllers who have been involved in an operational error are counseled, trained, and recertified as required by the Facility Operation and Administration Handbook 7210.3H and that appropriate entries to reflect these actions are made in the controller's training records."

A reorganization of the Quality Assurance and Training Program at O'Hare Air Traffic Control Facility in September 1986 resulted in several actions which addressed directly the intent of this recommendation. These actions followed FAA evaluations which underscored the need for additional emphasis in these critical areas. The following is a partial list of the measures already accomplished to address the deficiencies noted by this safety recommendation. Separate Quality Assurance and Training staffs have been established for the tower and radar facilities. Staff personnel who were assigned other duties have been returned exclusively to their quality assurance duties, and additional staff personnel have been assigned to supplement quality assurance and training staffs. Management and supervisory emphasis has been reemphasized with respect to position recertification, relief checklists, standard phraseology, and other quality assurance areas. Managers and supervisors are ensuring that all requirements of Facility Operation and Administration Handbook 7210.3H are followed strictly with respect to controllers involved in operational errors, and that each controller's training record reflects the actions which were accomplished. This program is now operational at the O'Hare facility and is monitored regularly by FAA air traffic management personnel.

Question 6. When will the FAA initiate its rulemaking on requiring a TCAS-II system aboard all commercial aircraft?

Answer. The FAA has an active regulatory project underway. The schedule calls for the agency to issue a Notice of Proposed Rulemaking (NPRM) late this year. Allowing time for public comments to the NPRM, analysis of those comments and finalizing the rule, a final rule concerning TCAS-II is scheduled for the end of 1988.

Question 7. What percentage of the total U.S. air fleet will be provided collision avoidance commands by TCAS? What percentage of the general aviation fleet will be provided such commands by TCAS?

Answer. The TCAS-II proposal may require all U.S. air carriers operating under Part 121, Federal Air Regulations (FAR), to be equipped with TCAS-II. An analysis of options is also considering the installation of TCAS on some smaller aircraft operating under FAR Part 135. Currently, it is not envisioned that the TCAS-II rule would be applicable to general aviation category airplanes. However, the NPRM may propose that a simplified TCAS system such as TCAS-I be recommended for this class of aircraft. TCAS-I would provide an alert that an intruder airplane was at a certain distance and in a given quadrant. No aircraft maneuvering comments would be provided. The comments from the public on this option and associated technical and economic factors must be obtained and studied prior to making a more definitive statement.

Question 8. Are there any conditions, such as inclement weather or airport proximity, in which TCAS will be inoperative? Would it have been operating and able to prevent the accident in 1986 over Cerritos?

Answer. There are no known adverse weather or airport proximity conditions which would render the TCAS-II system inoperative. Of course, TCAS will be deactivated on the ground and just prior to landing. The FAA is presently studying past mid-air collisions to determine if installation of a TCAS-II system would have prevented them.

Question 9. The Air Line Pilots Association has been advocating the use of TCAS-III over TCAS-II. What studies has the FAA done showing the benefits of proceeding with TCAS-II over waiting until TCAS-III is fully operational?

Answer. The FAA and others agree with ALPA that TCAS-III has some potential advantage over TCAS-II since it provides lateral maneuvering potential, in addition to the vertical maneuvering that is provided by TCAS-II. The drawback to the ALPA recommendation is that the TCAS-III system has 3 to 5 years of development work to be completed. For FAA and the airlines to await the TCAS-III system would mean no collision avoidance system in any airplane for at least 5 to 8 years. The current approach of requiring a TCAS-II system is the fastest way of getting a usable system aboard airplanes. The NPRM will address the issue of requiring an ungradeable TCAS-II to TCAS-III capability when the development and tests of the TCAS-III system are completed. It is not a question of TCAS-II versus TCAS-III but a safety consideration that a workable system is available now. In our view, to wait 5 to 8 years for a system with additional capability would not be a responsible approach toward ensuring the safety of the American travelling public.

Question 10. What will be the projected cost of TCAS-II for a commercial aircraft?

Answer. The cost of a TCAS-II system installed in an air carrier airplane is estimated to be roughly $150,000 per installation for the United Airlines limited installation program. More accurate cost estimates will be available as manufacturers get closer to production units and understand the market potential.

Question 11. In the aftermath of the Cerritos tragedy, many pointed to the lack of a Mode C transponder on board the private aircraft as a factor contributing to the collision. Will you require all general aviation aircraft to carry Mode C as a result of this accident? What is the installed cost of a Mode C transponder?

Answer. We are considering the issuance of a Notice of Proposed Rulemaking (NPRM) which would propose the use of Mode C transponders within 30 nautical miles of a primary airport's Terminal Control Area (TCA) from the surface to 12,500 MSL. The approximate cost for a Mode C transponder installation is $1,900.00.

Question 12. What will the Mode S do that the Mode C cannot? What FAA testing has been done to support the need for Mode S transponders? What will be the purchase price of a Mode C transponder?

Answer. Mode C, as generally understood within the aviation industry, indicates an aircraft transponder capable of reporting the altitude of the aircraft on which it is installed. A transponder does this in response to an interrogation from a ground radar system. Like any radar, this response enables the ground system to determine the location of the aircraft in azimuth and range. With Mode C, the altitude can also be determined.

Mode S is an improvement to both the ground radar and the airborne transponder which improves accuracy and reduces interference in the current Air Traffic Control Radar Beacon System called ATCRBS. It does this by discretely addressing the transponder in a specific aircraft under surveillance so that its reply can be received without interference from other replies from aircraft in the same area. Mode S also makes possible a data link between aircraft and ground. Altitude reporting is an optional feature of either ATCRBS or Mode S.

The Mode S system of airborne transponders and ground radars was extensively tested on engineering models at the FAA Technical Center and near Philadelphia Airport beginning in 1978. What is now known as Mode S was then known as Discrete Address Beacon System, or DABS. The improvements from Mode S were demonstrated in those tests. In addition, the data link feature was also successfully tested. Mode S has demonstrated both the surveillance improvements and the capability of a data exchange between aircraft and ground. Both improvements are needed to realize the benefits of the National Airspace System Plan.

FAA's economic analysis conducted to support the Mode S rule cited a $600 increase over an ATCRBS transponder. Today's price of ATCRBS transponders varies from about $1,000 to over $10,000. A Mode S transponder so priced could be upgraded to include data link, but the cost estimate does not include the upgrade because the rule not require it.

Question 13. How will your proposal to increase the number of Type I Terminal Control Areas affect the workload of air traffic controllers?

Answer. There will be no change in controller workload. The purpose of converting all present Terminal Control Areas (TCA's) to one type is to simplify and standardize procedures and equipment requirements for operating in TCA's.

Question 14. What effect do think this proposal will have on general aviation activities around these 23 airports?

Answer. There will be no activity presently permitted in Group II TCA's that cannot be accommodated in the new single type of TCA. The purpose of converting all present Terminal Control Areas (TCA's) to one type is to simplify and standardize procedures and equipment requirements for operating in TCA's. The proposed rule is written in such a way as to minimize adverse effects on general aviation activity while promoting the positive effects of standardization and simplification.

Question 15. The FAA has been severely criticized in the past year with respect to its safety inspector program, particularly by the General Accounting Office, which has conducted several studies of FAA programs. What specific steps have you taken to improve the coverage of your inspectors to ensure that every air carrier is adequately inspected?

Answer. The FAA has taken a number of key steps to improve its overall surveillance of air carriers, and we have made important progress in this area which, in our view, will contribute directly to improved safety in the airline industry. With respect to improving our inspection coverage of airlines, we took several important steps to bring this about. We have increased our inspector staffing levels. This was the most important determinant in performing adequate numbers and types of inspections of the aviation industry. We have also improved their training and day-to-day guidance on how to perform their duties effectively. And we have established National Program Guidelines which dictate numbers and types of inspections to be conducted throughout the country. Furthermore, we are continuing our recent practice of intensified surveillance of selected segments of the industry to ensure that everyone is subjected to periodic in-depth assessment.

Question 16. What type of guidance does the FAA provide its regions with respect to target inspections?

Answer. The National Program Guidlines (FAA Order 1800.56) were issued to the FAA regions in October 1985 and are revised annually to identify priority work functions that must be accomplished on a regular basis. Planning and accomplishment reports of essential inspection activity are routinely reviewed to ensure that appropriate inspection activities are adjusted to safety and environmental changes.

Question 17. What steps are being taken to improve the quality and comparability of data on FAA's airline inspection results? Will these result in a data base that can be used for ongoing comparative analysis of airline operations similar to the data base that was prepared from the 1984 NATI inspection?

Answer. As noted, the National Program Guidelines (NPG) were issued in 1985 and define priority surveillance activities to be accomplished on an annual basis. The process for planning, reporting, and tracking these essential NPG activities is captured through the automated Work Program Management subsystems (WPMS) which reside in each Flight Standards District Office. On a quarterly basis, WPMS data is uploaded from all Flight Standards District Offices to an FAA mainframe computer in Oklahoma City. Reports on accomplished activity are provided for analytical review and appropriate follow-up action. Summary data is also available on an ad hoc basis which provides comparison capability of surveillance and all other activities by type, function, and geographic location. The data will not be used, however, to attempt to draw any comparisons of one airline with another; instead, our efforts are directed toward assuring that all carriers provide their services with a high degree of safety. Efforts are nearing completion to provide direct accessibility of this data to key Washington Headquarters personnel in FY 1987.

Question 18. The FY 1988 budget request for the FAA calls for an additional 178 inspectors. Is the FAA in a position to adequately train and absorb these individuals?

Answer. Yes. The total FAA training program for aviation safety inspectors has been enhanced to accommodate mandatory training requirements for the new inspector work force. Additional inspector courses were initiated in January 1986 to satisfy the increased numbers of inspectors approved by Congress. The FAA has made a comprehensive, systematic effort to realign experienced inspector duties and responsibilities to match training skills and capabilities with workloads.

Question 19. By the end of the year, approximately one-third of the FAA inspector force will have less than 2-years experience. How will the FAA prioritize needed training of these people by experienced inspectors versus the need for continual inspections?

Answer. A revised FAA inspector training program has been in place since January 1986 to accommodate the additional inspector work force. Design, testing, and implementation for new training courses is continuing this year for new specialty areas, i.e., principal inspectors and accident prevention specialists. Also, as previously noted, the FAA has made a comprehensive, systematic effort to realign experienced inspector duties and responsibilities, to match training skills and capabilities with workloads. Furthermore, it should be noted that the responsibility for day-today involvement in the inspection and enforcement process by top management personnel has been stressed in the past three years within the FAA, which has contributed significantly to the agency's strengthened approach in this area.

Several efforts have been undertaken to improve the performance of the aviation tax safety inspector function to meet the growing demand of surveillance activity, while accounting for training requirements.

An intense job task analysis was conducted in 1985 of the inspector work function to improve future inspector duties and responsibilities.

National program guidelines were issued to foster standardization and accomplishment of priority work functions on a regular basis.

Newly revised and standardized inspector occupational handbooks will be published this year which will provide for standardization in work procedures.

Aviation safety inspection and support personnel staffing standards have been reviewed and revalidated to ensure accuracy of future planned aviation safety staffing levels.

Question 20. How has the FAA responded to NTSB reports that the FAA did not have a data system with the ability to analyze runway incursions, when this was made last September.

Answer. In a letter dated August 25, 1986, in response to safety recommendations regarding airspace incident data collection and analysis, the FAA informed NTSB that new procedures for collecting an automating information concerning operational errors, pilot deviations and near midair collisions had been implemented in June 1985. The NTSB was told that the new procedures were established to improve accountability for reporting and investigating airspace incidents; and under these procedures, a surface incident involving a loss of separation—in effect a runway incursion—must be reported as either an operational error or a pilot deviation, and such an incident may also be reported as a near midair collision by the flightcrew. In our letter, we also described specific steps being taken to improve data bases, including the incorporation of human and causal factor information in airspace incident reports. FAA's airspace incident databases contain pertinent information which is suitable for analysis and problem identification—efforts underway to improve these automated systems will ensure the collection of maximum utility data in the future.

Question 21. How useful are FAA databases on mid-air collisions and incidents in assessing aviation safety? What steps should be taken to improve the quality of the data?

Answer. For most applications, the FAA uses aviation accident information provided by the NTSB from their Aviation Accident Data System. Since the Safety Board determines probable cause for all aviation accidents, we regard their accident records as the official source for study and analysis. The FAA's Accident/Incident Data System is structured for FAA purposes—it contains far more incident information than the NTSB system and the data elements are intended for use by FAA employees in performing their duties of enforcement and certification. The FAA's airspace incident data systems provide useful information regarding near midair collisions (NMAC's), operational errors, and pilot deviations—in fact, analyses of NMAC and operational error incident data have served as the basis for proposals of remedial measures intended to reduce airspace conflict potential; has helped focus on specific issues that merit additional review; and has helped identify areas in the automated data systems which can be improved. To improve our data systems, we are currently revising the incident reporting forms to incorporate human and causal factor information which we believe will enhance our ability to identify problems underlying airspace incidents.

QUESTIONS OF SENATOR BENTSEN AND THE ANSWERS

Question. As to the increase in the number of air traffic controllers, that seems to be one issue where there is shared consensus. Prior to the PATCO strike and the subsequent firing of over 12,000 air traffic controllers by the President in 1981, I believe there were over 16,000 air traffic controllers handling significantly less commercial airline traffic than what exists today. As I understand it, we have some 14,805 air traffic controllers, of which only 9,555 (roughly 65 percent) are classified as Full Performance Level controllers. The rest are developmental controllers, trainees, or air traffic assistants. In FY 1987 Continuing Appropriations for the FAA, Congress mandated that the number of air traffic controllers total no less than 15,000 by September 30 of this year. What I would like to know is whether you consider that goal realistic? If not, then why not?

Answer. We fully intend to meet the goal of a 15,000 person controller workforce. At the end of February, we had already attained a controller workforce of 14,822, including developmental and full performance level controllers and air traffic assistants. Given our current progress in staffing, we have no question about meeting the Congressionally-mandated goal.

Question. Further, have you plans to rehire more of the former PATCO controllers, many of whom were at or near full performance level when they were fired, thus requiring a minimum of retraining and speeding up the timetable for complying with the Congressional mandate?

Answer. There are no plans to rehire former PATCO controllers who were terminated as a result of their illegal strike in 1981. In fact, that is not even considered as an option within the agency. we fully intend to meet our Congressional mandate for the air traffic control work force without hiring terminated controllers.

Question. Mr. Engen, all of us here, and of course, the public, continue to be concerned about the mid-air collisions. The recent collision in Utah, and the Cerritos, California mid-air collision did not inspire public confidence in our ability to keep the airspace safe. It is widely believed that some accidents and near-misses—and I note that last year there were a record number of near-misses reported—could be avoided if more general aviation aircraft were required to have a transponder device. I understand that less than half of general aviation aircraft in the U.S. have such devices. What does the FAA plan to do to solve the growing problem of near-misses, and would your action include requiring that general aviation aircraft be equipped with transponders?

Answer. We have ongoing regulatory efforts to reduce the incidence of near midair collisions. The transponder "on" rule adopted in December 1985 requires all aircraft operating in controlled airspace to have their transponder on and, if equipped with Mode C, it, too, must be turned on.

On January 29, we adopted our Mode S Rule, a part of which requires, effective December 1, 1987, a transponder and Mode C (automatic altitude reporting) for all aircraft operating in any Terminal Control Airspace (TCA).

We have also recently concluded a review of TCA's resulting in 39 action items to improve simplification of TCA airspace, operations, pilot requirements and education, as well as increased enforcement of TCA violations.

In addition, we have an active regulatory project underway to issue a Notice of Proposed Rulemaking letter this year, which, if adopted, would require the installation collision avoidance systems on airline aircraft.

Question. Let me move on to another subject if I may, Mr. Chairman. All of us who heard it will study with interest the Secretary's announcement that she will grant the airlines an antitrust exemption for them to meet to discuss ways to conform their schedules to reduce time delays. As Senator Hollings and others have pointed out, the delay time has grown far too long for commercial flights. Too many of the airlines bunch their flights around the peak flying hours like early morning and evening. Mr. Engen, I wonder if the Secretary fully appreciates the implications of her decision. I know that many people in the aviation industry are more than a little concerned that this action will be anti-competitive and eventually lead to an increase in the number of high density airports, like D.C. National, New York La Guardia, and Chicago O'Hare, without going through with a rulemaking. While this is not directly a safety concern, it is related to the Secretary's decision on how to reduce delay and congestion at the nation's busiest airports. I do not mean to second-guess the Secretary's decision. I just want to make sure that the Secretary has considered all the competitive angles. Would you elaborate a bit on how DOT's action will maintain the competitive balance at hub airports without giving the incumbent carriers a monopoly during peak flying hours?

Answer. The scheduling meetings with the airlines to reduce delays were held on March 16 through 19. At those meetings, the FAA obtained the cooperation of the carriers in depeaking some of the most congested scheduling periods at certain major airports. We believe the scheduling changes agreed to by the airlines will substantially reduce the effect on the summer schedule of one of the primary causes of flight delays—the practice of scheduling a large number of flights in a very short time period.

The potential anticompetitive impacts of such meetings were fully considered before the Secretary's grant of antitrust immunity was issued. Conditions were imposed on the discussions to ensure that the proceedings would not have an anticompetitive impact. For example, participation in the discussions and in any resulting agreement was entirely voluntary. Also, no discussion of markets was permitted. In the actual agreements reached, only carriers with a substantial number of slots made schedule changes, so that operations by smaller incumbents were not affected. While there are no new entrant carriers known to be interested in operating at any of the airports under discussion at this time, the FAA will consider the needs of new entrant carriers for fair access to these airports if such a request is received for the summer season.

Finally, the voluntary depeaking actions taken by major carriers in these meetings can in no way be considered an extension of the High Density Rule and will not lead to an extension of the rule. On the contrary, we believe that these voluntary adjustments will postpone or eliminate the need for extending the rule to additional airports.

Question. My last question, Mr. Chairman, may be just pecking at the fringe of the discussions we are having here today, but I think there are safety issues connected to it. It has to do with landing slots and DOT's final rule last year giving away these landing slots. Mr. Chairman, you and Senator Kassebaum led the charge last year on this issue. I was pleased to vote with you on the amendment to reverse DOT's rule. Unfortunately, the issue died in the other body. I continue to be a little concerned about how DOT came to the decision to give away these slots. It is especially curious and more than a little troubling when you consider that this Administration proposes selling so many other public resources. My question is: in light of the capacity and documented safety needs of our nation's airports, is it possible for DOT to consider revising its landing slots rule to provide for an auctioning system or another form of selling the slots to generate proceeds that could be used for improving the safety of the air transportation system?

Answer. Takeoff and landing slots at the four high density traffic airports have been assigned without cost to air carriers and commuter operators since the rule took effect in 1969. The effect of the Department's December 1985 rule was to make a single allocation of the slots (to the carriers then using them), and afterward permit the transfer of slots among carriers for any consideration agreeable to the carriers involved.

The system, which has been in place since December 1985, has proven to be a very efficient allocation mechanism for ensuring that slots receive optimum use and that carriers retain the flexibility to adjust their schedules without continuous government intervention. New entrant carriers at the 4 high density airports have been accommodated through lotteries of available slots and the ability to lease and purchase slots held by incumbent carriers.

The auction mechanism was considered by the Department of Transportation in the rulemaking which led to the current slot allocation rules. After consideration of the many comments received on the various possible alternatives for slot allocation, an auction mechanism was rejected because of the inefficiency and unfairness of the auction process and the disruption to existing air service patterns such a process would entail.

Finally, I would note that it is the auction process, and not the regulations adopted by the Department, which would constitute a sale of public resources by the Government. By providing for an allocation of slots to the carriers without payment to the Government, as we have done since 1969, the current regulations avoid creating a property interest in the slots. As a result, the slots can be withdrawn and reallocated as necessary to provide air traffic control the flexibility to meet ongoing operational needs at the high density airports.

QUESTIONS OF SENATOR KASTEN AND THE ANSWERS

Question. Admiral Engen, since we previously thought that since the NAS Plan would allow us to use new equipment in 1988, we allowed our current equipment for controllers to age. Obviously, the need for a heightened maintenance work force is necessary to take care of the aging equipment, but the maintenance force has shrunk. Congress has disapproved of plan that would allow for the FAA to contract out in this important and vital area. Do you feel that contracting out would be a prudent course to follow?

Answer. Although much of the current equipment remains to be replaced, great strides have already been made in installing less labor intensive solid-state equipment to replace older, vacuum-tube equipment. Introduction of this highly reliable equipment and limited remote monitoring has also allowed us to consolidate work centers and to establish a more efficient organizational structure. These actions have allowed us to reduce our maintenance work force while maintaining a high level of system performance. In regard to contracting out, the Congressional disapproval related to a pilot test which FAA proposed. We are again proposing funding for a pilot test in the fiscal year 1988 Budget to evaluate the ability of the private sector to maintain selected portions of the NAS at comparable performance and cost under similar conditions. Based on the results of that test, we will be in a better position to render a judgment on the question of contract maintenance.

NAS PLAN

Question. The NAS Plan was supposed to have been in place by 1988. Obviously, we will not reach the goal of full utilization of NAS by next year. When can the Aviation Subcommittee expect a revised and realistic schedule for implementation of NAS to be forthcoming from the FAA?

Answer. First issued in December 1981, the National Airspace System Plan describes the actions needed to modernize and improve air traffic control and airway facilities services through the year 2000. The 90 projects contained in the plan have individual schedules for completion ranging from as early as 1985 up through the mid-1990's. The next edition of the NAS Plan, which will be released this spring, will contain the latest schedules.

Senator FORD. We will now turn to our next witness, which will be Jim Burnett, NTSB.

You may proceed, and will not put a time limit on you.

STATEMENT OF HON. JAMES E. BURNETT, CHAIRMAN, NATIONAL TRANSPORTATION SAFETY BOARD; ACCOMPANIED BY RONALD L. SCHLEEDE, CHIEF, AVIATION ACCIDENT DIVISION; AND LESLIE D. KAMPSCHNOR, DIRECTOR, BUREAU OF TECHNOLOGY

Mr. BURNETT. Mr. Chairman, I want to take this opportunity to congratulate you on your ascendency to the leadership of this important aviation panel. Speaking for my colleagues on the Safety Board, we are most grateful for the interest and support you and the other Members of the Committee have provided in the past.

We are particularly grateful to the distinguished former Chairman, Senator Kassebaum, and the distinguished former Ranking Minority Member, Senator Exon, for their excellent leadership in aviation safety matters and for their support for our activities. We look forward to working with all of you to advance our mutual safety goals.

Before beginning my testimony, which I will summarize, I want to introduce a staff member at the table with me, Mr. Ron Schleede, Chief of Aviation Accident Division. Joining me now on my left is Mr. Leslie D. Kampschnor, who is the Director of Bureau of Technology.

In addressing the broad topic of aviation safety, the Safety Board believes that the most significant threats are the risk of collision, both in the air and on the runway, and the dangers imposed by severe weather. Some of the accidents during the past few years also prompt concern about the level of flight crew training being practiced by some of the airlines.

Along with this, the Safety Board repeatedly has addressed the adequacy of the FAA's oversight of these activities. As you know, 1986 turned out to be one of the safest years in aviation history for U. S. scheduled commercial operations, both air carriers and commuters. There was only one fatal accident involving a Part 121 scheduled carrier which crashed shortly after takeoff from Kelly Air Force Base in Texas, killing a crew of three.

There were also two fatal accidents involving Part 135 scheduled operations, one of which involved issues of significant concern to the Safety Board, which I will address later.

The 1986 U.S. accident record also was marred by the August 31st mid-air collision of a Aeromexico DC-9 and a Piper PA-28 over Cerritos, California. Because it involved an Aeromexico airplane, this accident is not included in the domestic air carrier accident statistics.

We all realize, however, that the accident exemplified one of our foremost concerns, and that is of the safety of the air traffic control system. While the Safety Board acknowledges the continual advancement in the Nation's ATC system since the early 1970s, this accident illustrates shortcomings in the system which must be addressed to reduce the potential mid-air collision threat even further.

Ironically, the Aeromexico DC-9 was inside the boundary of a positive control airspace, a Terminal Control Area, when the collision occurred. Unfortunately, the PA-28 pilot had penetrated the boundary of the TCA without the requisite communication with the controller, and the smaller airplane was not equipped with the transponder altitude reporting features that would have helped the controller to perceive the conflict.

On January 15, 1987, another midair collision occurred, this time between a Sky West Airlines Swearingen Metro and a Mooney near the Salt Lake City International Airport. The early findings of the investigation of that accident indicate circumstances strikingly similar to those of the Cerritos accident.

The collision occurred within the confines of an Airport Radar Service Area, ARSA, and the Sky West pilot was communicating with an air traffic controller as required. The Mooney pilot, however, had not established communications and the airplane was not equipped with the altitude reporting feature.

The Safety Board believes that several actions can be taken to prevent these accidents. First, the FAA must be more vigorous in its efforts to educate general aviation pilots regarding the communication and equipment requirements for TCA and ARSA penetration. Second, the Board supports the imposition of more stringent requirements for automatic altitude reporting transponders for general aviation aircraft. Third, the FAA must expedite a program to upgrade terminal area computer equipment to incorporate a VFR conflict alert feature.

Testimony by FAA officials at the Safety Board's public hearing following the Cerritos accident indicate that all of these actions are being considered.

The Board recognizes that total positive control in all airspace is beyond the capabilities of any ATC system planned for the foreseeable future and there will remain a need for see-and-avoid traffic separation. Thus, we were encouraged in June 1981 when the FAA Administrator announced the decision to move forward with the Traffic Alert and Collision Avoidance System, TCAS.

While this program has moved forward, it has yet to reach a stage where certification for use is imminent, and therefore there has been no positive safety benefit from it to this point.

Given the recent emphasis on TCAS by the present FAA Administrator, the Safety Board hopes that the program is on track and that it will move forward without further delay. It is with concern, however, that we now find some segments of the industry willing once again to hold off until a TCAS system is developed which will provide evasive maneuvers in the horizontal plane as well as the vertical plane.

The concept of horizontal maneuvering undoubtedly involves more complex issues. The problems arising from the inclusion of horizontal maneuver-logic have yet to be resolved and tested. Although a system with this capability might ultimately be better, we believe the necessary research should not displace the priority of implementing a viable collision avoidance system now.

The Safety Board's recent investigations of several runway incursions incidents have re-enforced broader concerns about the overall health of the air traffic control system, specifically the ability of the present ATC staff to cope with the increasing volume and complexity of traffic at the Nation's major terminals.

For example, the Safety Board is aware that there were more than 20 ATC operational errors at the Chicago/O'Hare terminal facility during 1986. The circumstances of two of these incidents disclose the continuing existence of deficiencies noted by the Board in earlier ATC evaluations.

These include the limited experience of supervisory personnel, the use of experienced controllers on positions to the exclusion of their use for training of lesser qualified personnel, and the lack of a definitive quality assurance program.

While some of these deficiencies may be unique to the Chicago/O'Hare facility, the Safety Board is continuing to monitor FAA's actions and is considering further recommendations to re-emphasize the needed efforts.

The Board is encouraged that there were no major air carrier accidents during 1986 attributable to a most significant weather problem, the microburst windshear phenomenon. Nevertheless, the occurrence of 18 accidents, seven of which were fatal, costing 575 deaths since 1970, convinced us that the microburst windshear is a hazard that deserves high priority attention.

The Board has issued 50 safety recommendations to the FAA since 1970 addressing actions needed to prevent windshear related accidents. The recommendations generally have addressed the need for better windshear forecasting, detection, pilot training and airborn warning and guidance systems.

The Board was pleased that the FAA last year focused its windshear activities into an integrated program plan which encompasses nearly all of the elements of the Safety Board and industry recommendations.

However, with the exception of the education and training efforts, the FAA programs will take several more years to implement. The fact remains that the very limited Low Level Windshear Alert System will be the only ground-based detection system at most airports during the next microburst season, and possibly for a few years to come.

Although the 1986 safety record of our scheduled commuter carriers was exemplary, investigation of three accidents involving Part 135 commuter airlines have re-enforced concerns previously expressed by the Safety Board. These accidents pointed up the need for further improvements in areas such as operational and maintenance practices, management and pilot qualifications, training and FAA surveillance in general.

The Safety Board has issued over 100 safety recommendations since 1975 on these subjects. Most of these were well received by FAA and industry. Several positive actions have been taken and the commuter industry safety record reflects it.

However, these three recent accidents prompted the Board to address several more specific issues. All three of these accidents occurred while the flight crews were attempting to complete precision instrument approaches in instrument meteorological conditions. None of the flight crews indicated that they were experiencing an airplane or equipment problem and none of the post-accident examinations disclosed such problems which would explain the accident.

Thus the investigations and problem cause focused on the performance of the flight crew, their experience and training, the FAA's oversight of the carrier's training program and the overall human performance aspect of the cockpit environment.

Twenty-one safety recommendations were issued to the FAA and two to the Regional Airlines Association addressing these issues as a result of the three investigations. The Board generally has been encouraged by the FAA's reactions to these recommendations and particularly pleased by the enthusiasm of the Regional Airline Association in pursuading their carriers to act voluntarily to implement needed changes.

Mr. Chairman, I have indicated throughout this tesitmony that the FAA has been generally responsive to the Safety Board's safety recommendations. There is one area I must discuss in which the FAA regretfully has not been responsive.

The Safety Board has repeatedly expressed strong views that the requirements for flight recorders of both the U. S. air carrier fleet and the scheduled commuters are antiquated and inadequate for accident investigation and safety promotion purposes.

Many of our large turbojet air carrier airplanes are still equipped with only the five-parameter metal foil analog flight data recorders. Even airplanes that have been recently manufactured but certificated to pre-1969 standards are equipped with recorders that monitor only five basic parameters, although the recorders may be of a newer digital magnetic tape design.

While the flight recorder requirements for the large transport fleet are merely inadequate, the requirements for our commuter fleet which is carrying a much larger portion of the people who are flying these days, are totally non-existent.

The current regulations for commuter and air taxi operations require a cockpit voice recorder only in turbojet airplanes having a passenger seating configuration, excluding pilot seats, of ten seats or more. There are no requirements for recorders of any type in turboprop powered aircraft, even though they may carry up to 30 passengers. And, of course, these aircraft are the ones that are typical of those that are being introduced in our Nation's commuter fleet.

On January 8, 1985, the FAA issued a Notice of Proposed Rulemaking, the substance of which proposes retrofit of digital type flight data recorders with added parameters on all large transport airplanes not so equipped. It also requires the installation of cockpit voice recorders on new Part 135 multi-engine turbine powered airplanes certificated to carry six or more passengers and required to have two pilots.

While the Board believes that requirements even more stringent than those proposed are needed, we acknowledge that the proposed rule would be a step forward. It is certainly not very satisfying that two years have passed since the initiation of this rulemaking action and a final rule has yet to be adopted.

The Safety Board further notes that progressive aviation regulatory authorities of other countries already have adopted flight data recorder requirements more stringent than those required or proposed by the FAA. In fact, the International Civil Aviation Organization has adopted standards which are totally consistent with Safety Board recommendations. These standards were agreed upon by 56 countries.

The Safety Board will continue to urge the FAA to expedite rulemaking actions to upgrade flight recorders on the U.S. airline fleet, and ultimately, to adopt regulations consistent with the ICAO standards.

We would appreciate the support of this Committee in this endeavor.

That concludes my formal statement, Mr. Chairman. I would be pleased to answer any questions you or any other Members of the Committee may have.

Senator FORD. While it is on my mind, let me add very quickly regarding the upgrade of the flight recorders—you say 56 other countries have already agreed to that?

Mr. BURNETT. Basically that is the position of the International Civil Aviation Organization.

Senator FORD. Is this country a member of the International?

Mr. BURNETT. Yes, we are one of the 56.

Senator FORD. We have not agreed to that?

Mr. BURNETT. We have, although the agencies jointly adopted it and the United States did not object to those standards, we have not put them into effect in this country.

Senator FORD. I have just two or three questions, Mr. Burnett, and maybe others will be developed.

Yesterday, Secretary Dole announced her intent to allow the reduction in the miles of separation between aircraft in flight. Would you support such a move given where we are in terms of controller staffing and experience level, and the condition of our technology.

Mr. BURNETT. We are very concerned about the reduction of the separation intervals, primarily because there is a problem already handling the traffic, the frequency with which it is arriving at the major airports. We are concerned about stacking that traffic and the ability of the controllers, who have never had the duty of handling stacked traffic to a major degree, doing that in a safe manner. And the reduction of the intervals seems to complicate those other problems.

So it is a matter of concern to the Safety Board. We have not yet had an opportunity to review in full the Secretary's position, and I would not want to take a final position, but it is certainly a matter of concern to us.

Senator FORD. Are controllers today getting an adequate amount of time for training? If not, what should be done to ensure that their development is not hindered?

Mr. BURNETT. One of the key problems that we see in training relates to the training of tower personnel. You have to draw a distinction between the FAA's program for training tower personnel and for training people in radar facilities.

The FAA's initial training program in Oklahoma City is not really a training program. It is a screening program. It screens out people who can't do the work, so that they will focus their training efforts on people who can. Then, controllers are sent into the towers to really be trained on the job.

Now they have at Oklahoma City a sophisticated training program for radar controllers, but the training program for tower controllers is in the facilities. When you have a very busy tower environment, it is awfully hard to be able to allow the experienced controllers to spend as much time as you need to get the less experienced controllers trained.

That is the reason we continue to have problems with limitations in the number of full performance level controllers. What they do is bring somebody into a tower, they train them on one or two positions so they can begin to use them and then they don't have time to get them trained on all the positions so that they can get maximum flexibility out of them.

This then begins to limit, and makes a much more difficult personnel management situation and has implications for the overall safety of the system.

So, this is the kind of problem we are seeing with their training. What we would like to see them do is to begin an actual off-the-job formalized training program for tower controllers, with sophisticated simulators, such as the military is already using, so that they would be able to bring people into the tower facilities with much more training than they now have.

Senator FORD. Mr. Burnett, are you saying to me that there is a difference between a tower controller and a radar controller?

Mr. BURNETT. In the way they are trained, yes, there is.

Senator FORD. In the way they are trained.

Mr. BURNETT. Of course, also in the job they have to do.

Senator FORD. So a tower doesn't necessarily have radar.

Mr. BURNETT. No, they may have a Brite display, but it is a different operating environment entirely.

Senator FORD. With respect to the recent accidents involving commuter airlines, which are now carrying more and more of our population, you have mentioned that lack of pilot experience has been a contributing factor.

Do you believe that the increase in demand for pilots among the major airlines has reduced the number of qualified commuter pilots, and if so, what can be done to reverse the problem?

Mr. BURNETT. Well, it certainly has severly strained it. We have seen great expansion on the part of many commuter carriers; some of them within a year or two period have multiplied the number of pilots they have hired, and at the same time many of them have experienced turnovers with many of their pilots going to the major carriers, some 25 percent a year, and in some cases more.

This has really placed a major burden on the regional airline industry as far as maintaining qualified pilots. Really, when you look at the kind of burden they have had, and the kind of progress they have made in their safety record, it is a wonder that they have been able to do it. They are entitled to some applause for that.

However, it remains a matter of concern and we continue to see in accident scenarios low-time pilots in instrument conditions, sometimes both the captain and the first officer, both members of the crew, being relatively unexperienced in their respective positions—one of the recommendations we have made is for the commuter industry is to be sure that they match up an experienced captain with a less experienced first officer, and if they have a less experienced captain, that they be sure to also have an experienced first officer, so that you don't get two relatively inexperienced people in the same crew.

It raises I think serious questions. We have made recommendations about the quality of their training program, which is not as professional as the major carriers have in the first place. They don't have simulators, for instance, to work in. So those questions are really going to have to be given close attention this year and the coming years.

Senator FORD. I suspect that the commuter training would involve the captain flying one leg of a flight while the first officer will fly the next leg. That is, they alternate. Thereby allowing the first officer to gain experience.

Mr. BURNETT. That is typical, also, of major carrier operations.

Senator FORD. And the ground time that they can give with that simulator is important, I suspect. Visual aids, experience, going through the routine and that sort of thing.

Mr. BURNETT. They do have to conduct a lot more of their training actually in the aircraft, and of course, actual training programs cannot be conducted with passengers on board. So that really complicates the situation for them as far as the availability of aircraft to do that.

Senator **Ford**. They have very few aircraft. They try to limit the aircraft as much as they can because it reduces their expense.

Mr. **Burnett**. We have made recommendations to the FAA to expedite programs to certify training devices that, though not as sophisticated as simulators, nevertheless allow a certain level of training to be provided on the ground without using the actual aircraft. We believe that doing that is going to improve the quality of regional airline training programs. And the FAA is moving forward on that, with the support and encouragement of the industry.

Senator **Ford**. Thank you, Mr. Burnett. Senator Kassebaum.

Senator **Kassebaum**. Thank you. Mr. Burnett, you mentioned in your opening comments the terminal control areas, and I wonder if you could make some suggestions from your observations, which I think are always very forthright and astute on these issues, exactly how the general aviation pilots are going to be able to adapt to some of these changes.

For instance, it is very difficult for the VFR pilots to identify the boundaries of controlled areas and to obtain the necessary clearance to transit at that point. Let me ask you specifically, do you think there are enough air traffic controllers, given the proposed changes that the FAA is going to make, to clear the increasing amounts of traffic that would need clearance when those changes take place?

Mr. **Burnett**. I think the first problem we have to address is if you have all these Mode C transponders, whether or not the equipment will be able to handle the capacity and then you also have the air traffic—to the extent that you put more aircraft into positive control, it is going to complicate the situation for the air traffic controllers handling the traffic. Those are legitimate points.

However, on the other hand, the design of TCAs is very complex, and one of the reasons they are complex is that there have been efforts made to accommodate general aviation traffic. Making them more complex makes them much more difficult for the general aviation pilot to use them in a safe manner, because unlike the air carrier who is told exactly where to go at all points and really doesn't have to be concerned with whether he is in the TCA or out of it, the general aviation pilot has to understand the structure of that airspace.

Here you have the, presumably, less sophisticated pilot, although some general aviation pilots are highly sophisticated but many are not, who have the harder task of trying to understand the structure of rather complex airspace.

That is one reason that the FAA moved toward the ARSA concept in which we are supposed to have a highly standardized positive control area, and that has been one thing that is a positive move.

I think something is going to have to be done to provide more protection than we are now giving to major carrier aircraft from collision with general aviation aircraft and also with commuter aircraft. Not only are we going to have to keep under-equipped and under-trained, speaking of pilots, general aviation activities away, but we are going to have to provide enough margin that the controllers will be able to identify those that are improperly in those areas and get them out of there before they actually can present a conflict.

That represents some disadvantages to the general aviation industry, but my feeling is that we are going to have to move to some degree in that direction. It is very important that we be very considerate in how we do that, that we don't move too far, overburden the system or unnecessarily interfere with the general aviation industry, which is a very important industrial activity in this country, as well as a matter of great concern to many of our citizens.

Senator KASSEBAUM. That is really what I wanted to ask you; what recommendations you had in terms of education for general aviation pilots. But it is going to be difficult, I think, to disseminate the information. I think the education process will have to take some different directions as more and more of the air traffic control system becomes computerized.

Mr. BURNETT. There are no easy answers to this problem. We are looking at these issues in the course of our investigation and preparation of the report on the Cerritos accident, and also the more recent Sky West accident. It is going to be difficult to arrive at solutions that are not in some way harmful.

Senator KASSEBAUM. You mentioned identifying the general aviation pilots that were in controlled areas without proper clearance and your goal of deterring them from entering in the first place. Did I misunderstand? And exactly how would you do that?

Mr. BURNETT. If they are accidently in the areas, and if they can be contacted by radio, and are willing to be contacted by radio—sometimes the controllers can warn them and tell them that they made a mistake. Now, we also have TCA intruders who are intentionally violating that airspace and then, of course, they are not going to respond, they don't want to be identified. That is a much more difficult problem.

The FAA is working on ways to increase their enforcement abilities in that regard—that is one of the things that they did immediately after Cerritos.

That is not an easy thing to do, because we don't have, and would not want, police officers up there in the sky. That would add to the additional traffic problems.

Senator KASSEBAUM. Is there a way to check whether the transponder is working prior to takeoff, and not giving clearance if there is no communication?

Mr. BURNETT. The problem is they are coming out of uncontrolled airspace, intruding into positive control airspace. Sometimes it is hard—the controller can't always tell that they are in fact in that airspace because if they don't have Mode C transponder then you don't have any idea of the altitude. The airspace is designed based on altitude. So they can't tell from the controller's screen whether they are in or out.

It is all a complicated situation.

Senator KASSEBAUM. Maybe I am confused, but in the Cerritos accident, there was no way to contact the pilot. Is that not right? Communication had failed.

Mr. BURNETT. That is correct. He was not in communication. We don't have any reason to believe intentionally that he was not, but that he had accidentally gotten into somewhere where he was not supposed to be.

I guess a blind transmission would have been the only thing possible. We wouldn't have known what frequency he was on.

Senator **Kassebaum**. Thank you, very much.

Senator **Ford**. Thank you, Mr. Burnett. We always appreciate your cooperation, help and advice. I am sure we will be visiting with you some more before these hearings terminate, and we thank the two gentlemen that came with you.

Mr. **Burnett**. Thank you, Mr. Chairman.

[The statement follows:]

STATEMENT OF HON. JIM BURNETT, CHAIRMAN, NATIONAL TRANSPORTATION SAFETY BOARD

Mr. Chairman, I want to take this opportunity to congratulate you on your ascendency to the leadership of this important aviation panel. Speaking for my colleagues on the Safety Board, we are most grateful for the interest and support you and the other Members of this Committee have provided in the past.

We are particularly grateful to the distinguished former Chairman, Senator Kassebaum, and the distinguished former Ranking Minority Member, Senator Exon, for their excellent leadership in aviation safety matters and their support for our activities. We look forward to working with all of you to advance our mutual safety goals.

In addressing the broad topic of aviation safety, the Safety Board believes that the most significant threats are the risk of collision, both in the air and on the runway, and the dangers imposed by severe weather. Some of the accidents during the past few years also prompt concern about the level of flightcrew training and maintenance being practiced by some airlines. Along with this, the Safety Board repeatedly has addressed the adequacy of the FAA's oversight of these activities.

As you know, 1986 truned out to be one of the safest years in aviation history for U.S. scheduled commercial operations, both air carriers and commuters. There was one fatal accident involving a Part 121 scheduled carrier in which a Lockheed L382 aircraft, operated by Southern Air Transport as a cargo flight, crashed shortly after takeoff from Kelly Air Force Base in Texas, killing the crew of three. Although the Safety Board has not yet determined the probable cause of that accident, we know that it involved unique circumstances and was not representative of a generic air safety problem.

There were also two fatal accidents involving Part 135 scheduled operations. An Embraer Bandeirante being operated by Simmons Airlines crashed during an approach to the Alpena, Michigan Airport, killing the co-pilot and two of the seven passengers. That accident did involve issues of significant concern to the Safety Board which I will address later.

The other accident involved an older airplane, a Grumman Mallard G73 operated by Virgin Island Seaplanes at St. Croix, V.I. The airplane experienced control difficulties shortly after takeoff and crashed into the water, killing one passenger. This accident, too, appeared to be uniquely related to the airplane involved.

Unfortunately, the Safety Board cannot view the excellent safety record amassed by U.S. operators during 1986 as an indication of the health of our industry any more than we can view the terrible record of 1985 as an indication of disaster. In 1985, we had seven fatal accidents involving Part 121 scheduled and non scheduled operators which resulted in 526 fatalities. Thirty seven more persons were killed in seven fatal accidents involving Part 135 scheduled commuters.

The 1986 U.S. accident record also was marred by the August 31 midair collision of an Aeromexico DC-9 and a Piper PA-28 over Cerritos, California. Because it involved an Aeromexico airplane, this accident is not included in the domestic air carrier accident statistics. We all realize, however, that the accident exemplified one of our foremost concerns, that of the safety of our Air Traffic Control (ATC) system.

The Cerritos accident ended a nearly eight year period without the occurrence of a midair collision involving an air carrier airplane. All 64 people abroad the DC-9, the three people aboard the PA-28 and 15 people on the ground died as a result of the accident. While the Safety Board acknowledges that continual advancements in the nations' ATC system since the early 1970s have contributed to the infrequency of these occurrences, this accident illustrates shortcomings in the ATC system which must be addressed to reduce the potential midair collision threat even further.

Following the midair collision of a Pacific Southwest Airlines B-727 and A Cessna 172 over San Siego in 1978, the Safety Board stated that the most significant collision prevention measure is the establishment of positive control airspace wherein the separation of all traffic is affected by the air traffic controller, and that air carrier aircraft should be provided the protection of this positive control airspace to the maximum extent possible. The Board recognized concurrently that an automated back up was needed to alert an air traffic controller to an impending traffic conflict.

Ironically, the Aeromexico DC-9 was inside the boundary of positive control airspace, a Terminal Control Area (TCA), when the collision occurred. Unfortunately, the PA-28 pilot had penetrated the boundary of the TCA without the requisite communication with the controllers, and the smaller airplane was not equipped with the transponder altitude reporting feature that would have helped the controller to perceive the conflict.

On January 15, 1987, another midair collision occurred, this time between Sky West Airlines Swearingen Metro and a Mooney 20C near the Salt Lake City International Airport. The early findings of the investigation of that accident indicate circumstances strikingly similar to those of the Cerritos accident. The collision occurred within the confines of an Airport Radar Service Area (ARSA), and the Sky West pilot was communicating with an air traffic controller as required. The Mooney pilot, however, had not established communication and the airplane was not equipped with the altitude reporting feature.

The Safety Board believes that several actions can be taken to prevent these accidents. First, the FAA must be more vigorous in its efforts to educate general aviation pilots regarding the communication and equipment requirements for TCA and ARSA penetration, and in its efforts to discipline pilots who violate positive control airspace. Second, the Board supports the imposition of more stringent requirements for automatic altitude reporting transponders for general aviation aircraft. Third, the FAA must expedite a program to upgrade terminal area computer equipment to incorporate a VFR conflict alert feature. Testimony by FAA officials at the Safety Board's public hearing following the Cerritos accident indicate that all of these actions are being considered.

The Board recognizes that total positive control in all airspace is beyond the capabilities of any ATC system planned for the foreseeable future, and that there will remain a need for "see and avoid" traffic separation. The limitations to the "see and avoid" concept long have been recognized by the Board. Consequently, at least nine safety recommendations have been issued since 1969 expressing the need to develop and require a collision avoidance system aboard air carrier airplanes which would provide pilots with warning and evasive maneuver guidance independent of the involvement of air traffic controllers.

The Board thus was encouraged in June 1981 when the FAA Administrator finally announced the decision to move forward with the Traffic Alert and Collision Avoidance System (TCAS) program.

It was over ten years ago that the so-called beacon collision avoidance system (BCAS) concept was being developed and tested. The principles of that system—the technical concept, the collision warning and command logic, the cockpit displays and so forth—were not significantly different from the TCAS system under discussion today. While the TCAS program has moved forward, it has yet to reach a stage where certification for use and general implementationn is imminent.

Given the recent emphasis on TCAS by the present FAA Administrator, the Safety Board hopes that the program is back on track, and that it will move forward without further delay. It is with concern, however, that we now find some segments of industry willing once again to hold off until a TCAS system is developed which will provide evasive maneuvers in the horizontal plane as well as the vertical plane. The concept of horizontal maneuvering undoubtedly involves more complex issues. The problems arising from the inclusion of horizontal maneuver logic have yet to be resolved and tested. Although a system with this capability might ultimately be better, we believe that the necessary research should not displace the priority of implementing a viable collision avoidance system now.

The Safety Board's recent investigations of several runway incursion incidents has enforced broader concerns about the overall health of the air traffic control system, specifically the ability of the present ATC staff to cope with the increasing volume and complexity of traffic at the nation's major terminals.

For example, the Safety Board is aware that there were more than 20 ATC operational errors at the Chciago O'Hare terminal facility during 1986. The circumstances of two of these incidents, which were investigated in depth by the Safety

Board, disclosed the continuing existence of deficiencies such as noted by the Board in earlier ATC evaluations. Specifically, the limited experience of supervisory personnel, the need to use experienced controllers on positions to the exclusion of their use for training of lesser qualified personnel with a consequence that developmental controllers are not progressing to the full performance level, and the lack of a definitive quality assurance program. We beleive that some of these deficiencies may be unique to the Chicago O'Hare facility. The FAA has conducted its own evaluation of the facilityand released an action plan is September 1986 to address the specifically identified problems. However, the Safety Board is continuing to monitor FAA's actions and is considering further recommendations to reemphasize the needed efforts.

The Board is encouraged that there were no major air carrier accidents during 1986 attributable to a most significant weather problem—the microburst windshear phenomenon. Nevertheless, the occurrence of 18 accidents, seven of which were fatal costing 575 deaths since 1970, convince us that the microburst windshear is a hazard that deserves high priority attention. The Board has issued 50 safety recommendations to the FAA since 1970 addressing actions needed to prevent windshear related accidents. Fourteen of these recommendations were issued as a result of our investigation of the tragic accident involving the Delta Airlines L-1011 at the Dallas Fort Worth Airport on August 2, 1985.

The recommendations generally have addressed the need for better windshear forecasting, detection, pilot training, and airborne warning and guidance systems. The Board was pleased that the FAA during 1986 focused its windshear activities into an integrated program plan which encompassed nearly all of the elements of the Safety Board and industry recommendations.

Significant progress has been made in the definition of the windshear hazard and the development of the microwave doppler radar needed for better detection of the phenomenon. The Safety Board strongly supports the NEXRAD and Terminal Doppler programs. We have been pleased particularly with the FAA's contract with industry to develop an authoritative training program for flightcrews. However, with the exception of the education and training efforts, the FAA programs will take several more years to implement. The fact remains that the very limited Low Level Windshear Alert System (LLWAS) will be the only ground based detection system at most airports during the next microburst season.

The Safety Board believes that improvements to make the LLWAS system more useable can be expedited. Further, we believe that the FAA should evaluate the use of presently available weather radar or ATC radar with weather capability for the depiction of heavy rain in the vicinity of selected terminal areas and that meteorologists or controllers trained in meteorology should be assigned to certain towers during the convective weather seasons to coordinate and interpret significant weather data. The FAA does not share our view, although they have told us that they are reviewing alternate solutions.

Another factor in air carrier accidents indirectly related to the weather is operation on contaiminated runways. Accidents generally occur when the pilot is unable to stop the airplane after landing because of poor braking action. Fortunately the accidents are rarely fatal. Two such accidents occurred during 1986, one involving a US Air DC-9 at the Erie International Airport in Erie, Pennsylvania on February 21 and the other a Piedmont B-737 in Charlotte, North Carolina on October 25. The Safety Board has not yet adopted the probably cause for either of these accidents, and it is possible that both involved factors other than the runway condition. Nonetheless, we believe the potential for runway overrun accidents will continue until more positive actions are taken to measure and report runway braking action in such a way that it can be related to the airplane's stopping performance.

The Safety Board held a public hearing on this subject in May 1982 and issued a special investigation report containing 17 safety recommendations to the FAA. These recommendations specified the need for improved braking action reporting by pilots and controllers, improved pilot and controller training programs, continued research and development of friction measuring devices, and the development of better stopping performance data on wet or contaminated runways for inclusion in airplane flight manuals.

The FAA reacted favorably to all of the recommendations except those requiring more comprehensive airplane stopping performance data. The Board has been encouraged by the results of joint FAA and NASA tests of runway friction measuring devices. However, we still await the day when they will be used by airport operators to provide definitive braking action reports to pilots.

Although the 1986 safety record of our scheduled commuter carriers was exemplary, investigation of the accidents involving Bar Harbor Airlines in Lewiston, Maine, on August 25, 1985, Henson Airlines near Grottoes, Virginia, on September 23, 1985, and Simmons Airlines in Alpena, Michigan, on March 3, 1986 have reinforced concerns previously expressed by the Safety Board about the need for further improvements in areas such as operational and maintenance practices, management and pilot qualifications, training and FAA surveillance in general. The Safety Board has issued over 100 safety recommendations since 1975 on these subjects. Most of these were well received by FAA and industry and several positive actions have been taken. However, these three recent accidents prompted the Board to address several more specific issues.

All three of these accidents occurred while the flightcrews were attempting to complete precision instrument approaches in instrument meteorological conditions. None of the flightcrews, all of whom had been in radio contact with an air traffic control facility, indicated that they were experiencing an airplane or equipment problem, and none of the post accident examinations disclosed such problems which would explain the accident. Thus the investigations and probable cause focused on the performance of the flightcrews, their experience and training, the FAA's oversight of the carriers' training program, the operational procedures used, the human performance aspect of the cockpit environment, the potential safety enhancement provided by ground proximity warning devices and other safety issues.

Twenty one safety recommendations were issued to FAA and two to the Regional Airline Association (RAA) addressing these issues as a result of these three investigations. The Board generally has been encouraged by FAA's reaction to these recommendations and particularly pleased by the enthusiasm of the RAA to persuade their carriers to voluntarily act to implement needed changes in pilot training and cockpit standardization.

The Safety Board is concerned that some of the problems are not easily solved. Among these is pilot qualification and training. The captains of both the Bar Harbor and Henson airplanes had relatively few flight hours as pilot-in-command. Both were paired with first officers who also had little experience in their respective positions. The Board has provided previous testimony to this Committee on commuter safety issues, so I will not repeat that information here. You may be assured, however, that we will continue to push for improvements.

Mr. Chairman, I have indicated throughout this testimony that the FAA has been generally responsive to the Safety Board's safety recommendations. There is one area, I must discuss in which the FAA, regretfully, has not been as responsive.

The Safety Board repeatedly has expressed strong views that the requirements for flight recorders of both the U.S. air carrier fleet and the scheduled commuters are antiquated and inadequate for accident investigation and safety promotion purposes. Many of our large turbojet air carrier airplanes are still equipped with only the five parameter metal foil analog flight data recorders. Even airplanes that have been recently manufactured but certificated to pre-1969 standards are equipped with recorders that monitor only five basic parameters, although the recorders may be of a newer digital magnetic tape design.

Only those airplanes for which the type certificates were issued after September 30, 1969 must record an additional 12 parameters, and even these represent a small number of those parameters which could be monitored and used for comprehensive accident investigation analysis. The Safety Board has advocated that the number of parameters required to be recorded be increased to 32 on newly manufactured large airplanes operated in Part 121 service.

While the flight recorder requirements for the large transport fleet are merely inadequate, the requirements for our commuter fleet are totally nonexistent. The current regulations for commuter and air taxi operations require a cockpit voice recorder only in turbojet airplanes having a passenger seating configuration, excluding pilot seats, of ten seats or more. There are no requirements for recorders of any type in turboprop-powered airplanes or rotorcraft, even though they may carry up to 19 passengers.

The Safety Board is disturbed particularly that the investigation of a delivery flight crash in September 1986 was hindered by the absence of a flight data recorder. This was a newly certified and manufactured airplane, configured to carry 30 passengers in U.S. revenue service. This very same model airplane, manufactured for customers of foreign governments, is equipped with recorders. Moreover, the Safety Board is assisting the U.S. Air Force in its investigation of a fatal C-21 (Lear 35 model) executive jet accident at Montgomery, Alabama. That investigation had been exedited and a more clear cause and potential prevention measures will be possible because the airplane has recorders installed. The service aircraft in civil operation is not required to be so equipped.

On January 8, 1985 the FAA issued a Notice of Proposed Rulemaking, the substance of which proposes retrofit of digital type flight data recorders with added parameters on all large transport airplanes not so equipped. It also requires the installation of cockpit voice recorders on new Part 135 multi-engine turbine powered airplanes certificated to carry six or more passengers and required to have two pilots. While the Board believes that requirements more stringent than those proposed are needed, we acknowledged that the proposed rule would be a step forward.

It is certainly not very satisfying that two years have passed since the initiation of this rulemaking action and a final rule is yet to be adopted. The Safety Board further notes that progressive aviation regulatory authorities of other countries already have adopted flight data recorder requirements more stringent than those required or proposed by the FAA. In fact, the International Civil Aviation Organization (ICAO) has adopted standards which are totally consistent with Safety Board recommendations, and these standards were agreed upon by 56 countries. The standards define a 32 parameter recorder for large transport airplanes and recommend both cockpit voice and flight data recorders for small multi-engine turbine-powered airplanes.

The Safety Board will continue to urge the FAA to expedite rulemaking actions to upgrade flight recorders on the U.S. airline fleet and ultimately to adopt regulations consistent with the ICAO standards. We would appreciate your support in this endeavor.

In conclusion, I will state the obvious. Safety in aviation is costly, but so are accidents. It is our concern, following an exceptionally safe year and in the face of tighter budgets, that major programs such as advanced ATC automation, terminal microwave doppler radars, TCAS and upgraded flight recorders will suffer. We view the roles of the Safety Board and dedicated Congressional committees to assure that this does not happen.

That concludes my formal statement, Mr. Chairman. I will be pleased to answer any questions you and the other Members may have.

[The following information was subsequently received for the record:]

QUESTION OF SENATOR KASTEN AND THE ANSWER

Question. What can be done to improve the methodology of our safety inspection program? Would you support the idea of spot checks?

Answer. Several of the Safety Board's accident investigations have disclosed shortcomings in the Federal Aviation Administration's (FAA) surveillance of air carriers—these shortcomings appeared to be attributable to an overworked and relatively inexperienced staff of operational and airworthiness inspectors. These findings prompted the Safety Board to consider a safety study of the "Effectiveness of FAA Surveillance of Air Carriers" which would go beyond the scope of our normal accident investigation activities. The GAO's awareness of this situation in 1985 and the Secretary of Transportation's concern about the problem prompted independent studies by other resources. All of these studies supported the Board's findings that improvements of the FAA's safety inspector program were needed. The Safety Board's awareness of these studies and the pending actions by FAA to address the problem, combined with the limited availability of staff resources, resulted in our discontinuing a formal safety study. Instead, we decided to monitor the FAA's efforts to implement changes. The FAA's efforts consist primarily of complete revision of its Flight Standards field operation as set forth in Project SAFE and greater emphasis on the team surveillance/inspection of selected air carriers under NATI. We believe that the key elements of SAFE and NATI reflect the recognition that the number of inspectors and their training are inadequate; that no comprehensive standards exist for systematic inspection of the air carriers, and that the management and information systems regarding inspection and surveillance are deficient.

The FAA has provided our staff with several briefings about their progress to correct the noted deficiencies. Basically, we are encouraged by the actions that are being taken. We recognize that it is going to take time, continued commitment, and an adequate budget allocation to build an inspector organization that is capable of administering an effective surveillance and inspection program. By the FAA's own admission, their inspector staff for both air carrier and general aviation, at a current level of about 1800, is still far short of the 3,000 inspectors that they deem necessary. Present projections indicate that the needed inspector force will not be fulfilled until 1992 at the earliest. The Safety Board has some concern that even this appears optimistic—that it may become increasingly difficult to recruit personnel with the background and qualifications for the job. The Safety Board agrees with the FAA's efforts to develop a formal training program that will promote more standardized personnel qualifications and inspection procedures.

The Safety Board has been disappointed in FAA's progress to develop and implement an effective automated safety analysis system. In 1979, following the American Airlines DC-10 accident in Chicago, the Safety Board recommended changes needed to improve automatic alerting, timely acquisition, and wider dissemination of safety data. Strong support for an automated system was also forthcoming from GAO and a National Research Council Committee. The FAA acknowledged the need for this effort and stated that the ASAS would be operational by 1984. The system is yet to achieve its desired level of performance.

In response to your question about spot checks, there certainly appears to be some merit to a team-type inspection program such as the National Air Transportation Inspection (NATI) program conducted by FAA in the spring of 1984. During a special 90 day effort, FAA teams consisting of a wide spectrum of expertise conducted inspections of 327 air carriers and numerous aviation support organizations. Generally, the carriers were found to be in compliance with federal rules although as you know, several deficiencies were noted. In fact, 16 air carriers were found to have deficiencies sufficient to suspend their operations until corrective actions were taken.

Probably one of the greatest benefits to team conducted spot inspections is the ability to evaluate the extent to which the FAA's own inspector force applies consistent surveillance and enforcement standards and to take action to correct inconsistencies in this regard. Since completion of the NATI, the FAA has implemented an ongoing team inspection program. We have been informed that such inspections have been conducted on 19 air carriers and 20 repair stations during the past year. We believe that this program should continue as an effective part of FAA surveillance.

Senator FORD. Mr. McLure, we are delighted you are here and apologize for being so late. But this is the nature, every once in a while, and this is a very serious question that we are dealing in today. We look forward to your opening statement, and however you want to handle it, there will be no time restrictions on your statement.

STATEMENT OF HERBERT R. McLURE, ASSOCIATE DIRECTOR, GENERAL ACCOUNTING OFFICE; ACCOMPANIED BY KENNETH M. MEAD, ASSOCIATE DIRECTOR; AND CHARLES COTTON, GROUP DIRECTOR

Mr. McLURE. Thank you, Mr. Chairman. We were expecting this. We have been through this with you a few times before. I would like to introduce the people with me. This is Charlie Cotton. You and Charlie have talked with each other on occasion, at these hearings. And this is Ken Mead. Between the three of us we can pretty well talk about all the things GAO knows about in regard to aviation and aviation safety.

I have listened with interest this morning, and what I would like to do is submit our prepared statement for the record and just talk with you a little bit.

Senator FORD. There will be no objections to your submitting your statement in full, as if given, and you may proceed.

Mr. McLURE. You have heard a lot of different things this morning, a lot of different questions about different things and what I would really like to do is try to provide a framework on how all these questions fit together, the way we see it, and go through some of those things with you.

First, if you are talking about aviation safety, FAA does a lot of things but they have two big operational responsibilities. One is air traffic control, and the other is what everybody refers to as inspections. It is basically surveillance to make sure that the airlines comply with all the various rules and regulations and safety sorts of things that FAA wants them to do.

Now, deregulation affected both of those operations. It doesn't mean necessarily that it made it less safe, but it did affect it. It affected air traffic control in this way; there is more traffic, but FAA always knew there would be more traffic, but the traffic patterns have changed. The airlines are competing with each other by flying at the same times to the same places, so that traffic is denser at some places through the system.

Deregulation affected the inspection side of what FAA does because the airlines, again, are competing with each other and because of that competition they are very conscious of their costs. They are reducing their costs wherever they can, which includes maintenance expenses, pilot salaries, and a number of other things that can affect safety. What that suggests to you is that in their surveillance program, FAA ought to watch a lot more carefully what is going on because they don't want airlines to reduce costs below some safe minimum.

Well, FAA did respond on both of those counts. Let me just talk about air traffic control a little while. FAA knew the traffic was going up. They also knew they had an outmoded system; computers that were 20 years old, several generations old. So they knew they had to replace that and they planned to, right after deregulation, and in 1981 they published a plan that everybody refers to as the NAS Plan, National Airspace System Plan.

That plan encompasses all the technological things that people asked questions about this morning; new radars, new communications equipment, transponders on the airplanes—all of that stuff is part of the NAS Plan, part of the NAS Plan equipment.

The NAS Plan improves the thing across the board. Radars will let air traffic controllers have a better idea of where the airplanes actually are. Better communication equipment will make sure that they can actually talk to each other. FAA believes that the better computers will allow the computers themselves to make more air traffic decisions so that the air traffic controllers have to do less of that and that can be done also more efficiently.

And FAA, as a result, will need far fewer controllers than it would need with the present equipment. Finally, the new equipment will be a lot more reliable. So FAA is assuming that it will need a lot less maintenance capability and have many fewer breakdowns in the equipment.

We have looked at the NAS Plan. It has 11 major programs in it, and hundreds of procurement programs. Everything we have looked at has been delayed. When they originally laid out the NAS Plan they thought it was going to be primarily off-the-shelf procurement with technology they already had.

It has not turned out that way and, as a result, they are anywhere from a year, to eight, to ten years behind on some of these programs. Now some of them are not too far behind and the fact that they are behind, itself—I mean, it is a procurement program—procurement often gets behind. But the fact that it is behind has affected FAA's ability to maintain the margin of safety presently.

This is how: The controllers' strike and then the firing of the controllers was unexpected and FAA has done a nice job, I think, of recovering from that. They have hired more controllers and they have them trained and working. But they never planned to rehire as many as they had before the strike. Part of that thinking, I believe, was because the major laborsaving parts of the NAS Plan were supposed to be on line next year, or shortly thereafter.

So that within the next few years, FAA expected to need many fewer controllers. I believe they didn't figure they had to go out and hire as many as they had before.

Those laborsaving features now, by the latest estimates we have seen, can't come on line before the late 1990s. They simply won't be available. So FAA is kind of strung out with their controller situation.

Our work has shown that the controllers are stretched thin. The delay in the NAS Plan means that unless FAA hires more controllers they are probably going to continue to be stretched thin for a long time, another decade or so.

The real safety question here is, is that okay? Do they have enough of a margin of safety with what they are doing now that that is going to get them through the next ten years?

A similar question revolves around their maintenance technicians. They have allowed the number of maintenance technicians they have for the system to be reduced through attrition. That is because they assumed that this new equipment that is going to be much more reliable and need far less maintenance is going to be available to them and in use.

In the meantime, the Congress in the past couple of years has told FAA that they can't hire contract maintenance. They can't hire a contractor to do the maintenance for them. So now, something has to give here.

The equipment isn't going to come on line when FAA thought it was. They have many fewer maintenance technicians then they had, and those guys are running all over the country trying to take care of this stuff that is breaking down because the equipment is getting even older and less reliable, and they can't hire contractors to do it. So something has to give there.

On the inspection side of the house, of FAA's house, a similar kind of thing happened, but FAA wasn't really anticipating the problem as well as they were on the air traffic control side. What happened was, there got to be a lot more airlines all of a sudden. A lot of people entered the business after deregulation, and as Admiral Engen said this morning, they had to certify all those people.

In the meantime, they were allowing the number of inspectors they had to go down. We are not sure why, but they were allowing that number to be reduced. So not only were they focusing on certifications rather than inspections, they had even fewer inspectors. It wasn't until about 1984 when Admiral Engen came into the picture, that FAA, and the department, through some of the initiatives Secretary Dole brought to bear, actually realized what was going on.

At that time, FAA I think really started to get their act together on inspections, and our latest work shows that if they do all the things they have proposed to do in order to improve their inspection program, it will be vastly improved over what we have seen in the past and reported on.

Senator FORD. Will it be sufficient? Vastly improved is one thing, but sufficiently improved is another.

Mr. MCLURE. That is never a question that you can answer very easily, because you never know how much is enough.

Senator FORD. That is the reason I asked it.

Mr. MCLURE. If they do all the things that they say they are going to do, they will have made all the improvements that we identified as them having a need for. Whether they actually have enough inspectors and enough inspection coverage to catch all the different kinds of things that we worry about, we can't really know that.

Now one of the things we have found in both inspections, and the number of inspectors and the number of controllers, is that FAA hasn't adhered to a set of staffing standards that has any particular basis, scientific or any other kind of basis. They have kind of changed the number of people they say they need based on a variety of factors, not limited to the amount of work they have to do.

We are working right now with the controllers trying to figure out what the basis actually is that they use for saying how many controllers they need and whether that is a reasonable basis, and we will be able to tell you a lot more about that later on this year.

The inspection side of the place is the same sort of situation. We are not so sure about the basis for how many inspectors they need. In addition, since they haven't really kept track of what they have inspected and what they have found, we can't tell you how effective their inspection program has been, so we can't really tell you if the number of people they have is a good number.

Senator FORD. Are you saying to me that once they inspect, there is no data kept so when they go back next time to be sure that they don't have a continuation of the same type problems, it is not put into a computer where they can call them up and say this is what we have found and begin to get a handle on it.

Mr. MCLURE. I know that is hard to believe, but that is essentially true.

Senator FORD. Well, this occurred in other instances wherein the information was processed but never pulled out, specifically in Denver. So you can put it in a computer and never pull out, or never have it in the computer in the first place; both with the same end result.

Mr. MCLURE. Now let me just say that FAA knows that that was the case prior to 1984, that they actually were not keeping track of what they did. And for us, GAO, to find out what they did, we actually had to go into individual inspectors' files and pull out their own reports.

FAA, since then, has developed a reporting system. Unfortunately, there are several things wrong with it. One is that the inspectors don't all use the same criteria for reporting what they have found, and they don't code all the stuff the same way so that they aren't really getting comparable reports.

Second is, all the regional offices, what they call FSDOs have different kind of computers. The computers don't really talk to each other, and as a result, they can't roll all the information up. So, you know, if Tony Broderick, who was here earlier, was talking to you on this, he would say, yes, sir, Mr. Chairman, we are keeping track of all that stuff. But I have to tell you that while he wants to keep track of it all, he doesn't have it yet.

Senator **Ford**. Mr. McLure, it seems like you have pointed out a pervasive problem,. Our computers can't talk to each other. Our military doesn't have a communication system whereby they can talk to each other. The problem stems from the fact that there are various vendors competing for the same business. As Senators we can individually select any vendor. We would be criticized if all of us chose the same vendor. Thus, we all have different systems for which there is no compatability. Therefore, we find out that we can not intercommunicate with the various systems.

So what you are saying to me is, Senator, if you have a choice, take the best one and do it for all of them so that they are the same system, so they can talk to each other.

Mr. **McLure**. I can't say that officially; you know that.

Senator **Ford**. Can you say it unofficially.

Mr. **McLure**. Well——

Senator **Ford**. Don't answer that question. You already have.

Mr. **McLure**. There is one other point I would like to bring up, and that one of the things that Senator Kasten brought up, I believe, had to do with indicators and what to look at to tell whether the system is safe. A lot of people this morning talked about accidents.

Accidents certainly attract a lot of attention and you can't ignore them.

Senator **Ford**. They are all fatal.

Mr. **McLure**. That is absolutely right. But because they are so rare and because they don't necessarily have much to do with whether the system is operating safely, and by that, I mean an airline can do a lot of things wrong. Or, a pilot in an airplane can do a lot of things wrong, and still not have an accident, not have a crash.

On the other hand, somebody can do everything right and have an accident. So that, coupled with the fact that they are so rare, makes it not a very good indicator of how good the system is if you are looking for some sort of statistical indicator.

Near misses is probably a better indicator. Other things, like violations of the separation standards that the FAA maintains—things like that give you a better—they are precursors of accidents. If a lot of them happen, it improves the chances for an accident. So those are the kinds of things that we would like to see the FAA pay attention to measuring.

I think Admiral Engen has, and over the last couple of years he has improved the reporting certainly on mid-air near misses. We think they can probably do much more and I would like to see them focus on that.

There are a lot of different things you can ask about safety. Occasionally people stop me and say—is it safe to fly? I think that unquestionably the answer to that is yes. It is safer to fly than it is to do a lot of things we don't even think about.

It is certainly safer to fly than it is to ride a bicycle, if you look at the injuries and accidents that occur.

But, is it safe enough is a different kind of question. Is it as safe as it could be is a different question, still, and of course, those are the questions that people are really concerned about.

Senator FORD. Let me ask you two or three quick questions, and I will try not to keep too long. In GAO's report, I believe, of November 1986, your survey of the air traffic control work force, found that 60 percent of the existing controller workforce did not want the former PATCO rehired. What other ways do you see of increasing the experience level of the air traffic controller work force?

Mr. MCLURE. The only other alternative you have available is time. I mean, the people they are hiring now—they are doing a good job of bringing people in and training them. Nobody has really questioned that these people are well trained and well selected. But it takes time to get experience.

While Admiral Engen says he doesn't really see any differences between somebody with three years of experience and somebody with eight years of experience, most of us intuitively have a feeling that more experience helps.

So that takes some time, and what do you do in the interim if you think the system really is stretched too thin? Well, the thing you can do in the interim is be careful about how many airplanes you allow into this, what the air traffic controllers have to control. Quite frankly, I get concerned when I hear about FAA considering allowing more airplanes into sectors, which is one of the things Admiral Engen suggested he was going to do.

When you talk about the margin of safety, that does affect the margin of safety because if you have more space between the airplanes, that is inherently safer, and when you reduce the space, it becomes inherently less safe.

Senator FORD. Admiral Engen said that on a National level he had met his goal of 70 percent; however, when you look at specific airports it is evident that he was somewhat short, especially among the major airports. Thus a substantial amount of overtime is required.

Would you agree with that statement, or basically agree with it?

Mr. MCLURE. We have some exact numbers here. I think he may be right on a national level, but he has some trouble spots. He has a hard time getting people to move to places like Chicago, Cleveland, and New York—I am not sure why, but he does.

And those places handle a great deal of traffic. They are called en route centers, and it is traffic that is intersecting each other above 18,000 feet and those people are stretched. He has not met the 70 percent goal in those places.

Mr. COTTON. One thing that was news to us today. We have been waiting to report to Chairman Oberstar on the House side, just how far FAA has gone to reach their 70 percent goal. We haven't been able to do that yet because as of yesterday, FAA had yet to define that terminology that was in the law this year that says that the 70 percent is limited to the number of people that are eligible to be controllers. And without that definition you don't have a universe in which to take 70 percent of and measure it.

That was very clearly defined by Admiral Engen today; that taking out the ATAs, he considers all the rest of that work force, including people in the first day at the academy to be eligible to be controllers. So, we will be able to, in a week or so, be able to report back where FAA stands in meeting their 70 percent goal.

Senator FORD. Then in your opinion, do you think FAA will have enough controllers when they reach the level of 15,225, which they have proposed in the fiscal year 1988 budget?

Mr. MCLURE. Do we think they will have enough?

Senator FORD. Yes.

Mr. MCLURE. I can't answer that question right now. As mentioned, we will be able to answer that question later on in the year. I think they will probably be able to meet the 70 percent goal that was set for them, but whether that is enough controllers depends on how you define the controllers' job and what we are looking at right now is how FAA has gone about defining that job, and then how they have redefined it over the years as they have had to adapt to the changing circumstances.

Senator FORD. I find myself somewhat in a Catch 22. When Admiral Engen has stated that the new Host computer is in final testing and will be coming on line this year, yet you tell the Committee that controller productivity gains planned by the NAS Plan probably will not occur for another ten years.

Help me reconcile those statements, please, sir.

Mr. MCLURE. It is something that I think the Committee should be interested in throughout this year, and work with the FAA to try to better define what is actually happening with the NAS Plan. Admiral Engen will not only tell you about the Host, but he also mentioned that 90 percent of the things in the NAS Plan, they have already issued purchase orders for.

That is probably about true. The trouble is that those things have to be developed. We actually, in GAO, think that they committed to buying the things too soon; that they should have done more to make sure they were going to get what they wanted, and that the equipment would actually work before they committed to purchasing it.

Anyway, on a Host computer, it is coming on line, but the Host—they are talking about two different computer systems. The Host computer was built as a backup to the aging equipment that they have. What it does is vastly improve their speed and reliability and the amount of memory they have available in the computer. So right now, with the equipment they have when a controller asks for all the information that the system will give him, if there are a lot of planes in the air, he loses some of it because the computers they are using don't have enough memory.

Those computers are old systems. They were good at the time, but right now, really, you know, an IBM PC has more memory than these giant computers that FAA uses.

So the Host computer will take care of that and allow them to do well what the present system does. But the thing that gives them the improved productivity is called the advanced automation system, and that really is a combination of hardware and software that takes part of the controller's job and does it automatically, and that won't be available until the late 1990s.

So, Mr. Engen is telling the truth about the Host, it is just that the Host is not the answer that a lot of people think it is.

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Senator FORD. Do you feel that Admiral Engen and the FAA are trying to get the NAS Plan back on schedule, back on track? Are they pushing reasonably hard, or as hard as a bureaucrat can in his position?

Mr. MCLURE. I think that is an important question for the Committee. Of course, they can't really get it back on schedule. It is so far out of schedule now that they really can't get it back on track. But what they need to do with you is define for you what the present schedule is because if you are trying to decide, for example, whether there are enough controllers, you have to know how long it is going to be before the improvements in that plan start to become available.

So if it is going to be 1997 before the computers take care of part of the controller's job and they need fewer controllers, then—I mean, that is a piece of information you really need to know about because you have to decide what to do for the next 10 years.

Senator FORD. I believe last year you stated that the FAA could not—and I quote "say with assurance that airlines are complying with safety regulations."

Does that statement still apply today?

Mr. MCLURE. Yes, it does. Not because FAA is not trying to change it, but because they still don't have the kind of information, the reliable information that allows them to look back at the results of their inspections over the course of a year, and look for trends, determine overall how an individual carrier is doing, or how all the carriers put together are doing.

That really is, I think, at this point more a problem of getting the system that they are trying to get to work, to work properly than it is that they haven't done something, or need a different system, or something like that. They just need to get the thing working right.

The airline inspections that Admiral Engen mentioned, I think, do tell you a lot about an individual airline because they take a team of people and look at one airline nationwide. If they had better information, they would have something like that for all the inspections they did, if they kept track of who they were inspecting and what they found for everybody, then they would have that sort of nationwide data for everybody. That is what they are missing and that is why they can't really tell you how well airlines are doing nationwide.

Mr. COTTON. There is another reason why they can't. When we did our review in 1984, they had no guidance to the inspectors about how often to inspect an airline and what to look for. Since then they have implemented guidance that says that every airline will receive a certain type of inspection at least once a year, which is a tremendous step forward. But that requirement, that guidance, doesn't factor in certain airline characteristics that may have safety deficiencies related to them, such as contract maintenance, such as lack of adequate internal controls and things like that. A lack of compliance in the past.

So regardless of the airline's compliance or non-compliance record, right now, all FAA's guidance requires them to do is look at that airline one time in one year. We have recommended that they change that, and they have stated in prior testimony that they are doing it.

Mr. McLure. There was an interesting thing that came up in the earlier discussion. I think it was Senator Gore who asked Mr. Engen about some medical transports. I think it is kind of interesting to note, we issued a report last year on some work we had done on public aircraft.

A lot of those medical helicopters are public aircraft. They are owned by either a municipality, county, or a state, or in some cases, the Federal Government. What is interesting about that is that they are not regulated by the FAA; they don't have to meet FAA safety standards, the pilots don't have to be licensed. A lot of those helicopters that he was talking about simply aren't regulated.

In addition, accidents don't have to be investigated by NTSB, so they don't have any good records on why the accidents occurred. I thought you might be interested in that.

Senator Ford. Well, that is a good statement and I appreciate that. If we had known that earlier, the questioning and attitude from this Senator might have been a little bit different.

Does FAA have the authority to promulgate regulations as it relates to those?

Mr. McLure. No.

Senator Ford. You mean, we would have a change in the law?

Mr. McLure. Yes. It is a law that dates back.

Senator Ford. Why are they excused?

Mr. McLure. Well, we couldn't figure that out. Ken is actually familiar with that work, but it is a law that goes back to the 1920s and we don't know why they were excluded.

Mr. Mead. All public aircraft, Senator, including those owned by the Federal Government, are exempt from the FAA safety rules, by law.

Senator Ford. So, if this is a private operation, it would be covered?

Mr. McLure. It depends on whether they are working for a private hospital or a private entity. But if they are leasing their service to a public entity, then they are a public aircraft and they aren't covered.

Senator Ford. Each tragedy as I said earlier makes headlines because it is fatal. The emergency evacuation from one location to a better medical facility is very important.

There were two things that impressed me with Senator Gore and Admiral Engen's statement. One, it was a tragedy that these people were fatally injured and something needs to be done about it. We have had four or five accidents in a year. Admiral Engen said he understood that and it was something he wanted to look into, but you are telling me now you must have the law changed. When you begin to look at the percentage of those accidents, compared to the number overall, it represents a very large segment of the airline industry.

And then you have the emergency mentality of which I think the Admiral would be familiar with. That is, you are going to do everything you can do in order to get a child or an individual from one spot to the other regardless of the circumstances. It is an instinctive kind of thing.

Additionally, I think he said that you are going to have to tell the pilot that it isn't safe, that he is just not going to be able to fly. Senator Gore took exception to that.

Well, I sat here and tried to analyze that conversation a little bit, and I find that where the patient may expire, you have lost a parent or loved one. When a crash occurs, you loose two pilots, so then you have lost three. I don't know whether you can be that hard-hearted, that is, ruled by statistics. It is something that really concerns me that you would save three lives, and lost one if the pilot had said—look, it is too dangerous for me to fly and I can't do it for the safety sake of all of us. I want to be here to fly another one, and another one and another one. But he is no longer here, and you have anguish and that sort of thing involved.

Then you can blame the government for not regulating it, but you can also blame the Congress for not changing the law. It becomes a very mixed bag, if I can use that term, in trying to work out just exactly what is right.

We find ourselves trying to work our way through that mindfield to come to a conclusion.

Mr. McLure. I thought Admiral Engen, I have a lot of admiration for him, and he kind of takes responsibility for everything.

Senator Ford. He takes everything unto himself pretty good.

Mr. McLure. But I think you have to realize that he is limited in what he can do, at least in that particular area.

Senator Ford. I am glad you brought that up. One quick question and then this will be the end of it.

How closely should we look at mergers of the airlines. I say this to you because in all mergers regardless whether they are airlines or others, several things begin to happen. One, they remove certain personnel, including experienced personnel, because you are bringing them all under one umbrella. That is number one.

Secondly, you begin to look at how much you can reduce their salary. Then you look at how much you can increase profit. It seems to me that I see a trend in all mergers or acquisitions.

How closely should we look at this, and is there any danger of mergers reducing personnel, inspectors, maintenance people, or reducing pilot's salaries, et cetera? How important is it for this Committee to scrutinize this situation?

Mr. McLure. Fitting it into the overall framework, if FAA is doing the right kind of job on certification and inspection, then mergers shouldn't make much of a difference safetywise. The oversight should be adequate and the regulation should be adequate. Since we know that FAA is not completely caught up to where it needs to be as far as inspections, then you have to worry a little more about it. I think such indicators as pilot experience, maintenance expenditures, things like that, are things that DOT, in deciding whether to allow the merger, and the Committee in considering whether it will have an impact, really probably ought to pay some attention to.

Senator Ford. So there is a factor here. But as long as the inspections are adequate and the maintenance people are adequate it wouldn't make any difference because you would still have the same group when you bring several lines together.

Mr. McLURE. I think that is an important thing to remember about deregulation. FAA's operational responsibilities are the same. Now, deregulation did affect that. It changed those responsibilities; it changed what FAA had to do to handle those responsibilities, but if FAA makes the changes it needs to make, then the effects of deregulation shouldn't really necessarily affect safety at all.

Senator FORD. Well, we are going to get into noise, into a lot of things. I was surprised by my first trip to a hub, on one of the better airlines. They had five airplanes leaving at the same time.

Mr. McLURE. Did they?

Senator FORD. No, you know they didn't. I was keeping my fingers crossed that my destination would be one of the first ones called so I could be up at the head of the line in taking off, rather than being at the end of the line. It is very difficult for five airplanes to be taking off at the same time.

It is just a like a fellow who jumps on a horse and expects to ride off in ten different directions. You don't do that when you get an airplane out there, and you want all five of them to take off at the same time.

It just doesn't happen. It seems to me that this is part of the problem we are trying to work on. I think Secretary Dole hopefully can get into some of that. This is not necessarily just the major airlines—some of the commuters are also doing this as well.

Mr. McLURE. We look forward to working with you on these issues.

Senator FORD. I like your testimony. I like your attitude and I think we can work together. Our ultimate goal is as safe an aviation system in this country as we can get, and if it is 99.9999, that is where we want to go. If we can get it to 100 percent, we ought to try to do that.

Thank you, gentlemen, for being here today. I appreciate your patience. And I appreciate working with you and look forward to the future.

[The statement follows:]

STATEMENT OF HERBERT R. McLURE, ASSOCIATE DIRECTOR, RESOURCES, COMMUNITY AND ECONOMIC DEVELOPMENT DIVISION, GENERAL ACCOUNTING OFFICE

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE: We appreciate this opportunity to appear before you today to discuss the issue of aviation safety in the United States. We have done a great deal of work on specific aviation safety-related issues over the past several years, and would like to outline what we see as key issues for you today.

FAA'S ROLE IN AVIATION SAFETY

While other federal agencies, including the National Transportation Safety Board (NTSB), perform certain aviation safety-related functions, primary responsibility rests with the Federal Aviation Administration (FAA).

FAA's role in aviation safety is defined in the Federal Aviation Act of 1958, as amended, which charges the Secretary of Transportation with regulating air commerce in such a manner as to best promote its development and safety. The act makes the safety of air travel the joint responsibility of the airlines and FAA. Individual airlines are responsible for operating and maintaining their aircraft safely while FAA carries out its safety responsibility by setting minimum safety standards, monitoring airline compliance, and taking enforcement action when noncompliance is found.

FAA fulfills its collateral responsibility—to promote the development of air commerce—primarily by ensuring the reliability and operational effectiveness of the national air traffic control (ATC) system. The ATC system includes the procedures and techniques for managing and controlling take-offs and landings at airports; the control of aircraft en route from one destination to another; operational flight rules; and the installation, maintenance, and repair of ATC equipment and facilities. The ATC system, in its broadest sense, also includes the development and operation of airports. Thus, it is a system of mutual relationships among airports; air traffic control; flight crews; aircraft; and regulations, procedures, and techniques. Although the primary emphasis is on operational efficiency, safety is an inherent characteristic of the ATC system that cannot be easily separated from reliability and operational effectiveness.

It is against this legislative backdrop that the adequacy of FAA's efforts to meet its safety role should be measured.

MEASURING THE LEVEL OF AVIATION SAFETY

Overall, FAA and the airlines have done a good job fulfilling their safety roles. The national ATC system is one of the safest in the world and most agree that U.S. aviation is a safe mode of transportation. Yet, public interest and attention continue to focus on the issue of aviation safety. We think this is because, as Chairman Mineta of the House Subcommittee on Aviation has stated, the American public imposes a far more demanding safety standard on aviation than on most other activities in our society.

While the aviation accident rate has fallen over the last 2 decades, it may not be the best indicator of how safely the ATC system is currently operating. This is because many different things usually have to go wrong before an accident occurs. Investigators have observed that unsafe operating practices do not inevitably lead to accidents and, unfortunately, accidents can occur in the safest possible system to the most safely managed airlines. In either case, accidents occur so rarely that they cannot be used alone to analyze aviation safety in any detail.

For these reasons, more specific measures—precursors of safety risk—are needed to identify and direct attention to unsafe or high-risk conditions. FAA uses two precursors, near mid-air collisions and operational errors, as additional indicators of ATC system safety. Near mid-air collisions occur when two airborne aircraft inadvertently come within 500 feet of each other and operational errors occur when there is less than the applicable minimum separation distance between two or more aircraft or between an aircraft and terrain or obstacles and obstructions.

While FAA uses near mid-air collisions and operational errors to measure the safety of the ATC system, it has not developed similar precursors of risk to indicate how safely airlines are operating and maintaining their aircraft. An important indicator could be the frequency and severity of airline noncompliance with safety regulations and standards over time. Changes in the total number of safety deficiencies and the frequency of those considered to directly or adversely affect safety could be used to indicate whether the level of safety has changed from year to year and where additional FAA resources may be needed. Improvements in FAA's inspection guidance and management information systems are needed, however, before adequate and comparable data are available.

DEREGULATION'S IMPACT ON AVIATION SAFETY

Deregulation of domestic airlines in 1978 affected FAA's safety responsibilities in two ways. First, air traffic has reached record levels and is expecterd to continue to grow and increasingly competitive scheduling and hub and spoke operations have created peak air traffic periods and placed extra demands on the ATC system. Second, lower fares and a flood of new entries created an environment that put pressure on airlines to reduce aircraft maintenance, flight crew salaries, and other controllable expenses—a situation requiring greater FAA surveillance over airline operations and maintenance.

FAA'S RESPONSE TO INCREASING AIR TRAFFIC

Even before deregulation, FAA knew that air traffic would continue to rise through the turn of the century, placing unprecedented demands on the ATC system. It also knew that to meet this demand safely and efficiently would require improved and expanded services, additional facilities and equipment, improved work force productivity, and the orderly replacement of aging equipment. So in December 1981, FAA published a comprehensive National Airspace System (NAS) plan to modernize, automate, and consolidate the existing system.

In terms of dollars spent, the NAS plan is one of the largest single civil procurement programs ever, costing more than $16 billion by the year 2000. FAA believes the plan represents a practical way to achieve a significantly more efficient system while reducing the risks of mid-air and surface traffic collisions, landing and weather-related accidents, and collisions on the ground.

One NAS plan goal is to increase the productivity of various FAA work forces. Air traffic controller productivity is to be increased by an Advanced Automation System (AAS). Flight service specialist productivity gains are to be accomplished primarily through consolidation of existing stations and an automation system. And replacement of outdated vacuum tube electronic equipment with solid state devices in ground-to-air communications, navigation, approach and landing, and surveillance systems is to increase the productivity of the airways facilities technician. Five years into the plan, however, each of these systems has experienced schedule delays ranging from a year for an airport surveillance radar to 8 years for the Advanced Automation System, resulting in corresponding delays in anticipated productivity gains. Meanwhile, the controller work force has not fully recovered from the August 1981 strike and subsequent firing of over 11,000 controllers and FAA has allowed attrition to reduce the airways facilities technician and the flight service specialist work forces by almost 20 percent each.

Our March 1986 report stated that the growth in air traffic is straining the controller work force at many major facilities, especially "en route centers" which control flights between airports. Our consultant, the Flight Safety Foundation, compared the conditions we found with the results of a study it did for FAA in 1981, concluding that conditions within the controller work force have changed since their study and that the present system does not provide the same level of safety as before the 1981 strike.

FAA has acknowledged that some changes are needed in its air traffic control functions, and is working to increase its controller work force by about 1,225 people from about 14,000 to about 15,225 in fiscal years 1986 through 1988. FAA will, however, need several more years at its present rate of gain to meet its current goal of qualified controllers and the first major labor-saving features of its Advanced Automation System are not now expected until the late 1990's.

We are presently studying the flight service specialist and airways facilities technician work forces to determine whether similar effects are evident.

FAA'S RESPONSE TO THE NEED FOR GREATER AIRLINE SURVEILLANCE

The second way deregulation affected FAA's safety responsibilities was to create a situation requiring increased FAA oversight of individual airlines.

While the 1978 act removed government control over fare costs and schedules, FAA remained responsible for assuring that airlines comply with federal safety regulations. Until 1984, however, FAA took few steps to address the impact deregulation had on its safety oversight work load or staffing requirements. For example, between 1978 and 1983, when the number of airlines and aircraft grew substantially, FAA's inspector work force was reduced from about 1,600 to about 1,500 or by about 7 percent.

In May 1986, we testified that FAA could not say with assurance that airlines were complying with federal safety regulations. FAA studies—as well as those conducted by the Office of the Secretary of Transportation, the Department's Office of Inspector General, and by us—showed that FAA's airline inspection and follow-up activities were often insufficient to identify major safety problems or to ensure that problems were corrected once they were detected. For example, FAA's 1985 Safety Activity Functional Evaluation—Project SAFE—found that FAA surveillance of airlines was often ineffective and that broad changes in FAA's inspection program were needed to improve aviation safety. Moreover, several NTSB investigations criticized FAA's inspection program and concluded that ineffective FAA inspections contributed to aircraft accidents.

FAA also concluded that it needed to improve its surveillance of airlines and, building on initiatives launched by the Secretary of Transportation, has begun to take action on a broad front. FAA has increased the size of its inspector work force, established minimum inspection standards to identify what inspections need to be performed and how frequently, and affirmed that inspections—not certification of potential new airlines—are the inspectors' number one priority. FAA has also begun to address needed improvements in its internal controls and management information systems.

FAA expects to increase its number of inspector positions in fiscal years 1986 and 1987 by 365 and has requested an additional 178 inspector positions in fiscal year 1988. But it will be years before all the needed improvements in inspector hiring, training, and guidance are implemented; important regulatory revisions are completed; nationwide minimum standards for the type and frequency of airline inspections are revised to include characteristics that indicate possible safety deficiencies at a given airline; and adequate internal controls and management information systems are in place. Our draft report on this program is presently with the Department of Transportation for comment.

In closing, I would like to emphasize again that, like reliability and operational effectiveness, safety is an inherent characteristic of the air traffic control system that must be recognized and considered in deliberations on such issues as increasing operational efficiency and "privatizing" the system. For example, a NAS plan goal is to increase user efficiency by reducing aircraft separation standards, providing more fuel efficient routing, reducing spacing minimums for independent parallel approaches to runways, and minimizing weather-related delays. According to FAA, each of these increased efficiencies is contingent, at least in part, upon advanced technologies included within the NAS plan and each of these technologies has been delayed. It would seem appropriate from a safety perspective for FAA to continue to wait unti the NAS plan technologies are in place and working before it changes any of the related separation standards.

This concludes my testimony, Mr. Chairman, I will be happy to answer any questions you or other Subcommittee Members may have at this time.

[The following information was subsequently received for the record:]

U.S. General Accounting Office,
Resources, Community, and
Economic Development Division,
Washington, DC, April 29, 1987.

Hon. Wendell H. Ford,
Chairman, Subcommittee on Aviation, Committee on Commerce, Science and Transportation, U.S. Senate.

Hon. Pete Wilson,
U.S. Senate.

This letter responds to questions you directed to the General Accounting Office, and which concern testimony on air safety issues delivered before the Senate Subcommittee on Aviation, in January 1987.

Question 1. If TCAS is federally mandated in late 1987, when will it be on all commercial aircraft?

The answer to this question depends mostly on how long the FAA rule making process takes and whether any necessary system improvements can be made within FAA's schedule. FAA's currently anticipated timeframe for total commercial installation is around late 1991 or early 1992.

FAA is presently drafting the Notice of Proposed Rule Making (NPRM) for TCAS, after which it will be coordinated with the Office of the Secretary of Transportation and the Office of Management and Budget. FAA plans to publish the notice in September or October of this year. There will be a one year period for public comment prior to issuance of the final rule. Once issued, affected parties will have 3 years within which to install TCAS.

FAA officials point out that expediting this schedule could result in significant disruption and expense for all involved. They contend that potential system manufacturers need the presently schedule time to gear-up for commercial production and establish spare and repair parts inventories, and that this schedule allows airlines to install TCAS in their fleets without disrupting fare-paying passenger service. FAA's TCAS program officials feel that the scheduled time is also needed to gather operational test data and make any system refinements that may be necessary prior to commercial production.

Question 2. How soon will all commercial aircraft have TCAS III capability, assuming installed TCAS II units could be upgraded?

Our TCAS work to date has focused on TCAS II and prior systems. We, therefore, are not in a position to judge when commercial aircraft will have TCAS III capability. However, TCAS program officials advised us that (1) while TCAS III has undergone simulation and some actual flight tests, there are many technological and operational uncertainties involved with the system and much work remains to be done; and (2) TCAS III development is scheduled to end with validation of the software logic, around mid-1989. This schedule does not contain a contingency allowance for unforeseen technical problems.

It should also be noted that while FAA plans to require the use of TCAS II by commercial aircraft, no such requirement is as yet contemplated for TCAS III. Without such a rule, the acquisition of TCAS III by commercial airlines will depend on the marginal safety enhancement it affords over already installed TCAS II capability, the additional expense involved, the economic health/ability of the subject airline, and the willingness of that airline to voluntarily shoulder the additional expense.

Question 3. Can FAA enforce its stricter sanctions for unauthorized terminal control area (TCA) intrusions, given its present and projected staffing levels?

On March 9, 1987, FAA issued Compliance/Enforcement Bulletin No. 86-2, which established harsher penalties for illegally entering TCA's. Instead of lesser administrative actions, 60-day suspension of airman certificates or civil penalties of up to $1,000 will now be levied. Where warranted, the pilot involved may also have to pass an airman's competency test. FAA officials in the Office of Program and Regulations Management, Plans and Budget Branch, tell us that as before the new policy, the air traffic controllers will identify and refer the TCA violations to FAA inspectors for investigation and enforcement action.

GAO has not specifically examined FAA's ability to enforce these stricter sanctions with its present or projected staffing levels. However, in recent testimonies before the Subcommittee on Transportation, House Committee on Appropriations,[1] and the Subcommittee on Aviation, House Committee on Public Works and Transportation,[2] we have expressed concern that FAA may not have all the workload staffing informatin it needs to clearly establish the number of controllers and inspectors it needs.

Question 4. Will FAA's computers in the Los Angeles TCA become overloaded if all general aviation aircraft there equip with Mode C or Mode S transponders?

Since GAO has not performed an independent analysis of this issue, we made inquiry of officials with FAA's Air Traffic System Plans and Programs Division. These officials advised that (1) an FAA "in-house" analysis indicates the overall impact from widespread Mode C/Mode S deployment would not be significant; and (2) the impact on controllers would vary by location and some modification to surveillance techniques durng peak traffic hours might be necessary, possibly requiring expansion of automation programs at some of the busier locations (such as Los Angeles TCA). GAO has not verified the accuracy or reasonableness of this assessment.

If we can be of any further assistance to you regarding these matters, please contact me on 366-1743.

Sincerely yours,

KENNETH M. MEAD,
Associate Director.

[Whereby, at 1:05 p.m., the hearing adjourned.]

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[1] "FAA Appropriation Issues" (GAO/T-RCED-87-20, April 21, 1987).

[2] "FAA's Airline Inspection Program," May 14, 1986.

OVERSIGHT OF AVIATION SAFETY

FRIDAY, JANUARY 30, 1987

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
SUBCOMMITTEE ON AVIATION,
Washington, D.C.

The Committee met, pursuant to notice, at 9:33 a.m., in Room SR-253, Russell Senate Office Building, the Hon. Wendell H. Ford [Chairman of the Subcommittee] presiding.

Senator FORD. The Committee will come to order.

This is a continuation of our first hearings in the 100th Congress looking into aviation safety.

We are very pleased to have several expert witnesses, including the Majority Leader.

Before I recognize the Majority Leader, Senator Rockefeller, did you have a statement you would like to make this morning?

Senator ROCKEFELLER. Not a statement so much, Mr. Chairman, but I want to commend you, as always, for your vigorous leadership in these matters. Of course as you know, I am not a member of this subcommittee—I wish I were—but the Majority Leader of the United States Senate is here, and he is also my senior colleague from the State of West Virginia.

He has been a powerful and important figure in the aviation safety business. We have his testimony. He has had introduced and has had passed the Aviation Safety Commission Act of 1986. I know he is concerned about some of the results from it, and I look forward to his testimony.

Senator FORD. Thank you, Senator.

It is our pleasure this morning to have the distinguished Majority Leader, the Senator from West Virginia, Senator Byrd. Senator, whatever procedure you would like to follow, you can highlight it and go to the record, or you might give your total testimony. Whatever. And we will keep the lights off—these [indicating timer] out here.

STATEMENT OF HON. ROBERT C. BYRD, U.S. SENATOR FROM WEST VIRGINIA

Senator BYRD. Mr. Chairman, thank you; Senator Rockefeller, thank you. I thank the Members of the Committee and the subcommittee. I want to compliment you for conducting these hearings. They are needed. The more the spotlight is placed on this serious problem, the sooner measures will be taken to save lives, and I hope that the spotlight will stay on, and the warmer we can make it the better.

I would like to thank all of you for working with me last year to enact the Aviation Safety Commission Act. I think we all felt that the Commission would provide a needed and effective response to the growing concern about the diminishing margin of safety in our airways system. I wish I could report to you today that the Commission was preparing to begin its third month of a review of aviation safety issues. I cannot report that.

The Commission has not yet been established. The legislation was enacted on October 18, last year. The Commission was to have been set up within 30 days after the enactment of that legislation; 30 days passed; 60 days passed; 90 days have passed, and we are well on our way to 120 days.

When we look back upon the Roosevelt Administration and remember those first 100 days and reflect on the amount of legislation that was passed, the laws that were enacted, and the work that was done in 100 days, and then here to reflect upon this sorry record of the Administration in failing to appoint this Commission after 102 days, it is a shame.

I think that the administration is looking at this matter in a very cavalier attitude. The President has yet to appoint the Commission, which most of us believe would accomplish for civil aviation what the Rogers Commission had accomplished for the Space program in the wake of the Challenger disaster.

Despite assurances by the White House that the names of the Commission members would be forthcoming two weeks ago, those names have not been forthcoming yet. I had heard nothing further from the administration until yesterday at the White House when I brought this up at a meeting with the President. The Joint Leadership was there. The President had been briefed on the matter, obviously, because he spoke of the good record last year—but as I said to him afterwards, the near-misses are increasing, the incursions on the gound, and our luck is going to run out one day.

I can only assume that the administration does not share our concern regarding the seriousness of the aviation safety issue. The President told me yesterday that action would be taken quickly; that the names would be submitted to him I believe as of yesterday—they knew I was coming down and they knew of my previously expressed concern; so I am told those names will be cleared through the clearance process, and then they will be announced.

Well, Mr. Chairman, air safety is not a partisan issue. Republicans and Democrats fall equally fast. Newton's law of gravity does not make any distinctions between Party lines. There can be no partisanship when it comes to government providing for the safety of its citizens. The Administration claims that 1986 was one of the safest years for U.S. air travel, and the President told me that yesterday.

It points to the fact that not a single fatality was recorded involving any of the large American commercial airlines, but that is very little solace to the 67 persons who were killed in the collision last August 31 of an Aero-Mexico Jetliner and a private plane, nor is it comfort to the 15 persons killed on the ground as the planes plunged into a suburb of Los Angeles. Sometimes we forget the people on the ground.

National Transportation Safety Board Chairman Jim Burnett has pointed out that one year does not a trend make, and the tragic record supports his view. In contrast last year, 1985, was one of the worst years in aviation history with 23 accidents and 526 fatalities involving U.S. carriers. 1987 has already produced two mid-air collisions causing 16 deaths.

Waiting to count the number of fatalities seems to me to be short-sighted. Airline accidents are unforgiving. They are pretty final. It is incumbent upon us to develop strategies that help us to prevent their occurrence. We must begin by recognizing that the Nation faces a deteriorating margin of safety in air travel.

The Administration in the person of the Federal Aviation Administration says it cannot deal with somebody claiming that the margin of safety has decreased, and that no one has ever defined what "margin of safety" is, let along figured out how to measure it.

You and I know, Mr. Chairman, and the Members of the subcommittee know, and frankly the Administration knows, that the margin of safety is not an elusive, esoteric, arcane concept. "Margin of safety" defines the ability to manage our airways system in a way that minimizes the chances of an accident occurring, and those changes are increasing.

As a result of deregulation, the dramatic increase in the number of airlines and airline flights, and the loss of 11,400 controllers in the wake of President Reagan's firing of striking controllers after the 1981 strike, aviation safety considerations have been seriously compromised. We can measure the extent of that compromise.

The FAA, for example, announced on January 9, 1987, that an average of more than two near-misses per day were reported in 1986. More than 40 percent of those incidents involved at least one commercial aircraft. Of the 828 near-miss reports received by the FAA, 141 incidents involved planes which flew within 100 feet of each other. Aircraft came within 500 feet of each other in more than half of the total reported incidents.

A plane traveling at a speed of 400 miles an hour would travel at the rate of about 550 feet per second. So when they miss by 500 feet, they miss a tragedy not only to the persons on the plane but also to the people on the ground, by a second. We are talking about seconds and split-seconds.

Last night I saw Admiral Engen on television. I thought I heard him say that a near-miss was a "nonevent." It is "something that did not happen." Well, Mr. Chairman, there is going to be an event one day, I am afraid, that is going to happen and it is going to be too late. Unfortunately, these reports may only represent the tip of the iceberg.

In a December 5, 1986, letter to his fellow airmen, Captain Lloyd Barry, Senior Vice President for Flight Operations at United Airlines, wrote: "I am becoming increasingly concerned about the ever-present threat of mid-air collision. The very real hazard of a mid-air collision must be acknowledged by each and every one of us. The trend is indisputable. Within the last 12 months, United crews have averaged 6.3 near-misses per month."

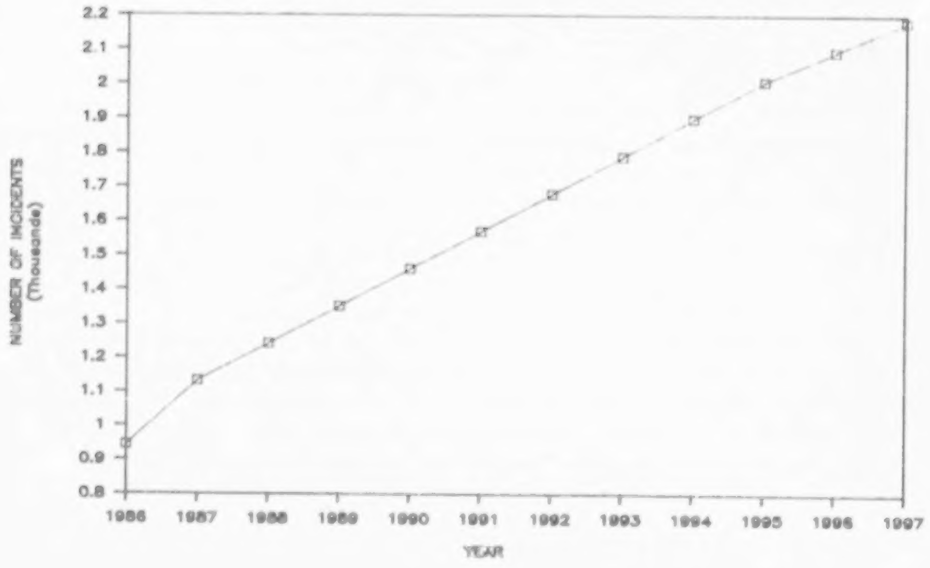
Mr. Chairman, last July I presented to this subcommittee an analysis of historical data that demonstrates a strong, statistically significant relationship between the volume of air traffic as measured by the number of commercial departures and the number of safety incidents. That is, near misses in the air and near misses on the ground, the latter being the so-called "surface operational errors."

What does this mean for the future? According to the FAA, air traffic is expected to increase at a rate of 7 to 10 percent a year over the next decade. If the recent correlation between traffic volume and the number of incidents continues, we can expect a steady increase in the number of safety incidents.

I have a chart here which the Committee can easily follow, and I will ask unanimous consent that this chart and another chart appear in the record of the hearings.

[The chart follows:]

EXHIBIT 1



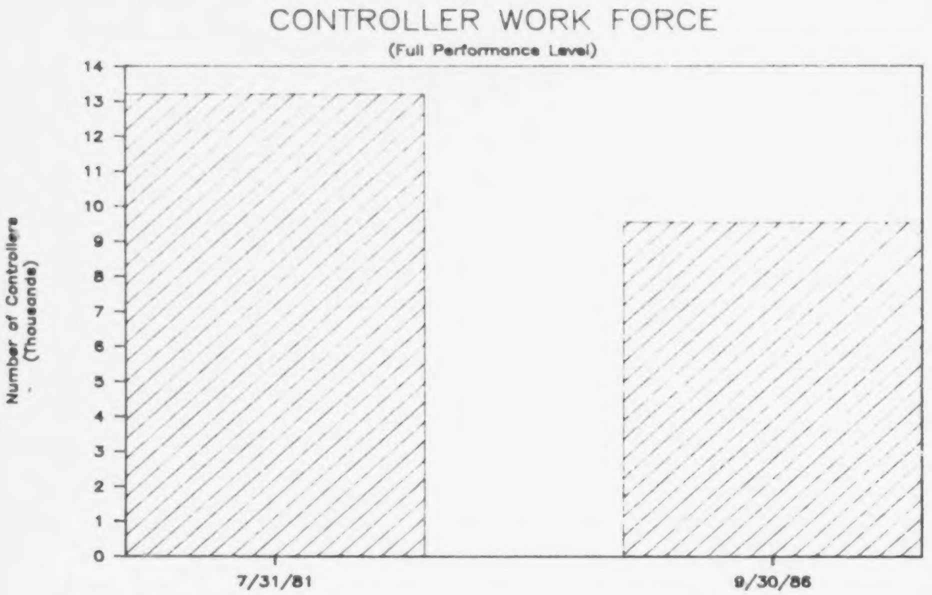
PROJECTED AVIATION SAFETY INCIDENTS

Mr. Chairman, that trend is unacceptable that you see on that chart. If we are going to continue to increase air traffic and avoid a commensurate increase in safety incidents, we must improve the margin of safety. That will require resolving a number of fundamental issues.

First, what are the staffing requirements needed to maintain the air traffic control system. The President's budget calls for increasing the controller work force by 225 positions in fiscal year 1988. However, even with that increase there would still be 3700 fewer full performance controllers, as we can see on Exhibit No. 2.

[The chart follows:]

EXHIBIT 2



3700 fewer full performance controllers than in August 1981 before the controller strike.

Second, what needs to be done to prevent system failures caused by the sheer increase in the volume of air traffic? For example, the 9020 Computer used to assist controllers in monitoring air traffic was out of service at the Denver air route traffic control center from January 8 to January 20 of this year, a total of 12 days, as a result of overloading the computer capacity. Consequently, there were numerous delays and the center had to control air traffic without a backup system for the entire time.

Third, what effect is the hub and spoke system having on aviation safety? For example, at Boston's Logan Airport, one of the 39 hub airports, 23 flights are scheduled to depart between 9:00 a.m. and 9:06 a.m., 6 minutes, 23 flights. At Chicago's O'Hare International Airport, 117 flights are scheduled to take off between 8:00 a.m. and 9:00 a.m., 117 flights in 60 minutes. In less than that, within a 50-minute period just after noon every day at Lambert St. Louis International Airport, 43 TWA Jets are scheduled to land, and 35 minutes later the same 43 TWA Jets are scheduled to start taking off.

The FAA projects that the number of aircraft operations will increase an average of 35 percent over the next 15 years at the 28 major hubs. These hubs are becoming overwhelmed by the growth in commercial traffic.

Fourth, what impact is deregulation having on the safety and adequacy of service to the outlying and rural areas? Because of the combination of hub expansion and FAA service consolidation efforts—for example, West Virginia will have four airway facilities maintenance offices reduced to one. Only one maintenance office will be available to provide computer, radar, and communications technical support for the entire state.

And fifth, given the enormity of the projected growth in air traffic and the number of airlines, FAA's resources will become stretched even thinner. Can and should the FAA continue to function in that setting as both a promoter for and a regulator of the aviation industry?

Mr. Chairman, these are a few of the many issues that need to be addressed. You and I are not going to solve these, and they are not going to be resolved I do not think without the benefit of an independent and thorough evaluation.

1987 is but 30 days old. Yet, already there have been two mid-air collisions, as I stated, and 16 fatalities. The growing stress on the aviation safety system is cause for concern. Without prompt action by the Administration to name the members of the Aviation Safety Commission—and let me tell you, Mr. Chairman, every time I have an opportunity to speak before a large group, I do not hesitate to tell that large group about the failure of the Administration to appoint this Commission. I have just started to turn on the heat. I addressed the Mayors the other day. I said, many of you flew into Washington. Many of you will fly out. It is your lives. Get the word into that White House that you want to see that Commission appointed.

You know, the White House has a way of going over the heads of the Congress. I think it is about time we go over the heads of the White House and turn up the heat. What is wrong with the Commission? Why not have the Commission? Let us have an independent evaluation of the situation. Take a look at the FAA. It wears two hats. Congress mandated that it wear two hats. One is to promote aviation safety, and one is to promote civil aviation.

I cannot help but believe that sometimes those two hats have a way of getting in the way, one with the other. I do not think we should continue to play Russian roulette with people's lives. The life you save, as I said to the Mayors, may be yours.

So perhaps that Commission will be appointed, hopefully soon, but already late. It needs to begin its vital and overdue work. I hope the American people will not be required to endure further delay.

Mr. Chairman, that completes my prepared testimony.

Senator **Ford**. I thank the Majority Leader for his fine testimony, and hopefully these hearings occurring less than 30 days after the beginning of this Congress will put some pressure on them to move. We will be expecting an answer in writing relating to your Commission, as it was passed by the Congress unanimously. So hopefully something will transpire from that.

I have no questions of the leader.

Senator Rockefeller.

Senator **Rockefeller**. I do not.

Senator **Ford**. Senator Exon.

Senator **Exon**. Mr. Chairman, thank you very much.

Let me echo your words in complimenting our tremendously busy Leader, Senator Byrd, for coming over here today. As you know, I was an enthusiastic supporter of the proposition that you introduced in the Senate and I believe, as Senator Ford said, passed unanimously. I think it is way past time for us to put heat on the White House, on President Reagan, whether he likes it or not, and whether the people fully understand or not what we are trying to do here.

If we just keep having the courage to say what we think is necessary, we are going to get through. I thought your words were extremely well chosen throughout your testimony this morning, and I thought particularly so when you pointed out that the President of the United States has absolutely refused to even seriously consider, as far as we know, the appointment of the independent group of experts to study what you so graphically represent in this chart that is before us.

I wonder how many people that fly airplanes regularly, as I will be doing later today when I travel through the busiest and possibly the most dangerous airport in the world today, called O'Hare in Chicago, know that in 1981 we had, as the chart indicated on the left, a full-performance work force of controllers and what we have five years after the PATCO strike.

I think that is a shocking chart. It graphically demonstrates what many of us that have been concerned about this safety matter on this Committee have known for a long, long time. I guess the saddest part of all, I would say to you, Mr. Leader, is that this is not a matter of money. We have billions of dollars in the Trust Fund that could and should be used promptly, and should have been used last year and the year before that, and the year before that, to solve the very problem that you are focusing in on here this morning.

So thanks for your valuable contribution. We appreciate it.

Senator BYRD. I thank the Senator. It is a mystery to me as to the reluctance to appoint this independent Commission. I simply cannot—I just cannot understand.

I want to compliment the FAA, and I want to compliment the system overall. There is nothing like it anywhere in the world. But I think we have to take a look and see what is going on, and let that be done by an independent Commission.

Deregulation, I am sorry I ever voted for it. I am sorry. I am sure that there have been some good results, and I am sure there are results that probably are not so good. I would like to have someone take a look at it. I just cannot understand this business of attempting to portray this system as becoming more and more safe based on the body count.

That, I am afraid, is putting it a more gruesome way. What is the Administration afraid of? The controller force is going to be—at the end of fiscal year 1986, the FAA claimed to have a controller work force of 14,803, but of that total force 1,514 were air traffic assistants employed solely for clerical duties; 3,761 were developmental controllers who are persons still undergoing training. As a result of the total work force of 14,803, only 9,528 represented full performance level controllers. This compares with a force of 13,200 FPLs as of July 31, 1981.

So one has to look behind the figures. I am going to say again, as I have said before, I have heard these soothing reassurances on TV by those who point to how safe the system is, and we grant all that. I am concerned. Those statements do not soothe me. I will tell you what I am afraid of as much as anything, that floating around up there in the clouds is going to be some little private aircraft with some pilot who has had about 300 hours, and he wanders over into an air space where he does not belong, and you have a big airliner coming up here with 100 people on board, or 150, or 200, 300, and a lot of people down there on the ground.

I am just terribly concerned. I am afraid to fly. I was not exactly born in the horse and buggy days. I used to be afraid to fly to West Virginia. I would drive eight hours anytime rather than fly. And then there came a time when I came to know more about the system, and the equipment, and the expertise of the controllers, and the dedication of the people in the system, and I lost my fear of flying. But I am afraid again. And you cannot tell me that these near-misses can go on and on without one day Lady Luck's walking away.

The body count will go up. That is a poor way to measure it.

So, Mr. Chairman, when the administration appoints that Commission and I read about it and know it is appointed, then I will bet on it. But I am still waiting. I got the promise yesterday from the very highest, the President, so I believe he will get it.

Keep up your good work.

Senator FORD. Senator Kerry, do you have anything?

Senator KERRY. I do not have any questions, Mr. Chairman, but I would like to associate myself with the comments of Senator Exon and thank the Leader for taking the time to come and assist us in drawing attention to this problem.

If I could just make one quick comment, Mr. Chairman, and I do not say this tritely at all, but the Leader is here to help us underscore the lack of commitment to the issue of aviation safety, and in fact there are great similarities between the TCAS efforts to have an alert system that prevents collisions, and the whole Star Wars effort that is geared toward creating collisions. The technology, actually, has great similarities, but we are still only slowly testing and years away from having the collision alert system.

We are proceeding at break-neck speed to develop the other. I think it just underscores what the Leader has been saying that if we had the same kind of commitment to aviation safety, into the safety of people flying, as we had to Star Wars, I am willing to bet we would have a TCAS system in airplanes today.

I thank the Leader for helping.

Senator BYRD. I thank the Senator.

Mr. Chairman, you have been liberal with your time, and I will close. I should close by saying that Mrs. Dole is my favorite departmental Secretary. She has done a good job, and her interest in aviation safety is, I am sure, equally as great as mine, and I want to say the same about Admiral Engen.

I think he is put in a difficult position by the mandates of the law, having these two competing duties placed upon him, but something has to be done, and I thank this Committee for leading the way.

Senator EXON. Before you leave, could I just make one more comment? I agree with the overall perception you are trying to place on this. As I told Admiral Engen yesterday, we have the best air traffic control system in the world right here in the USA, but it is not good enough because we also have the highest-density airports.

So the problem is that we are cheating the people of America who travel on our airlines. We are taxing them with billions of dollars to fund the Trust Fund which is designed to improve airports and air safety. The money is not being used for that purpose. That is stealing. I just want to thank you again for coming here and focusing attention on this. I think it is of vital importance, and I believe that your presence here this morning is going to highlight this much better than we could otherwise, and I thank you once again.

Senator **Byrd**. I thank the Senator, and I thank all the Members of the Committee.

Senator **Ford**. We thank the Majority Leader for coming this morning.

The next panel will consist of William F. Bolger, who is President of the Air Transport Association; Mr. Alan Stephen, Vice President, Regional Airline Association; and Mr. John Sheehan, Senior Vice President of Government and Technical Affairs, Aircraft Owners and Pilots Association.

If you three gentlemen will come around, we are going to put a limit on your opening testimony. Would five minutes be long enough?

Mr. **Bolger**. Yes.

Senator **Ford**. Fine. We will limit the testimony, then, of each of you to five minutes. I think we will allow each of you to make your opening statement. If you do not cover it in five minutes, we will be delighted to put it all in the record as if given fully. If you want to hit the highlights, that would be fine. Then, Senator Exon, would ten minutes be good enough? Then we will limit ourselves to ten minutes to questioning.

So with that, General Bolger, we will start with you, and go to Mr. Stephen, and then to Mr. Sheenan.

STATEMENT OF WILLIAM F. BOLGER, PRESIDENT, AIR TRANSPORT ASSOCIATION

Mr. **Bolger**. Thank you, Senator.

I have summarized this in about two pages, and I would like the entire statement put in the record, if I may.

These hearings are vital because they will affect the course of aviation in our country from now until the 1990s, and then through the 21st Century. The Committee has asked the Air Transport Association to give its views on seven specific issues. Let me highlight these:

One, air traffic controllers and staff deserve the Nation's highest praise for their efforts to assure the safety of air transportation. It is clear that the growth of aviation will require additional controllers. We believe that 500 additional positions in the air traffic control work force, over and above the 15,000 called for by the end of this fiscal year, are necessary. Action is essential to reduce intolerable delays in the air traffic control system. Among the steps that should be taken are a return to separation criteria used before the illegal PATCO strike of 1981, and reduce gateholds. In fact, the procedures now in effect add to controller workload.

The airlines this year will spend more than $5 billion on maintenance, and will continue to give highest priority to assuring the superb safety record that has been achieved under deregulation. The expenditures per flight hour are expected to decrease because of vastly improved designs and materials and system reliability.

Last year the U.S. airlines carried a record 415 million passengers on more than 6 million flights, more than 17,000 flights a day, without a single passenger fatality.

If the FAA needs additional safety inspectors, they should be—not just "should"—they must be hired. We have said this before, and we say it again.

The mid-air accident over Cerritos last year and the recent Salt Lake City commuter accident tragically highlight the need for changes in the structure of air space around the busy commercial airports. These accidents also illustrate the need to upgrade the level of safety equipment required aboard aircraft to enter that air space. I was glad to see Secretary Dole took some action on this and added nine additional airports yesterday.

Airlines do not wish to deny access to busy airspace to any class of aviation. What we do seek, however, is that all who use the airspace are properly trained and their airplanes are properly equipped to ensure public safety.

The airlines are working closely with FAA on TCAS-II and development of TCAS-III. TCAS technology will provide without question a reduction in the risk of mid-air collision.

On your seventh point with regard to cabin safety, we believe that improvements in the coordination of the research and development of the regulatory planning process can be achieved. As the industry has stated in its safety agenda, we support improvements in cabin safety and are confident that it can be accomplished through increased participation by outside experts.

The Air Transport Association also wishes to call to the Committee's attention additional thoughts of our concerning safety. The ATA safety agenda for 1987, a copy of which is attached for the record, spells out our priority concerns, including the need to reduce the risk of collisions. Also needed are improvements in windshear sensors, increased attention to the human factors area, and matters related to security and anti-terrorism.

The airlines are distressed, and so are their passengers and shippers, that the aviation trust fund currently has a surplus of more than $4 billion while urgent aviation modernization needs go begging. A General Accounting Office calculation of this surplus of unspent money for safety and capacity enhancement could reach $10 to $12 billion by 1990 under the current trend.

Finally, Mr. Chairman, we believe that if air transportation needs of the 1990s and the 21st Century are to be met safely and efficiently, strong consideration must be given to the creation of a National Aviation Authority or federal corporation to be responsible for funding and management of the air traffic control system. I believe that creation of this authority would enhance safety, and that is the primary consideration for all of us involved in air transportation.

That is my summary statement.
[The statement follows:]

STATEMENT OF WILLIAM F. BOLGER, PRESIDENT, AIR TRANSPORT ASSOCIATION OF AMERICA

Good morning. I am William Bolger, president of the Air Transport Association, which represents U.S. scheduled airlines. Mr. Chairman, it can only be considered an understatement to say that this committee's actions in 1987 will affect the course of aviation in this country from now through the 1990's and into the 21st century. The principal challenge for this committee, in my judgment, will be to provide the necessary leadership to ensure that U.S. aviation, always a world leader, continues to fulfill its potential in the future. Much is riding on the outcome of crucial national policy decisions related to air transportation.

I appreciate the opportunity to appear here today to give the committee our industry's thoughts concerning the safety of air travel. Your invitation to testify here today included seven specific issues on which you would like us to comment. I will provide you with our thoughts on those and several other important safety concerns.

(1) Regarding the staffing needs and experience levels of the current air traffic controller workforce:

The rebuilding of the air traffic control system after the illegal PATCO strike in 1981 has been a long and tedious process. The controllers and staff who dedicated their efforts to that task deserve our highest praise. Of particular concern to the air transport industry, however, is the apparent disposition of the FAA to view as their objective the return of the air traffic control system to a so-called "normal" state as defined by some past measure. Our concern centers on the need to have the system grow to meet future public demands for safe and efficient air transportation and not to settle for a level which will result in constraining future growth.

This growth will require, among other things, additional controllers. Since it normally takes more than three years from the beginning of training until a controller reaches full performance level standards, the training pipeline must be kept full. In addition to planning for the normal attrition—failures during training, resignations and retirements—the growth of air transportation must be figured into the equation.

As you know, 1986 was a record year for the U.S. airline industry in many ways, including safety. In 1986, the airlines carried a record 415 million passengers. That is 35 million more than in 1985 and up a whopping 140 million from the 275 million passengers in 1978 when Congress voted airline deregulation. The FAA has forecast that within the next decade, airlines will carry more than 620 million passengers. Air freight and mail services have also enjoyed substantial growth.

Since the PATCO strike, much of the supervisory workforce has been engaged in the active control of traffic. Longtime vacancies exist in the first and second levels of supervision at air traffic control facilities, and these vacancies can only be filled from the ranks of full performance level controllers, thus creating the need for still more controllers.

In order to meet growth projections and permit the filling of supervisory positions, ATA recommends 500 additional positions in the air traffic control workforce over and above the 15,000 called for by the end of this fiscal year.

(2) Regarding recent ATA proposals for reducing delays:

The foregoing discussion on controller needs dealt with the future growth and with the supervision of the system. It should be considered separately from the specific procedural recommendations which are currently the subject of active and intense discussion between ATA airlines and the FAA. The ATA recommendations presented to the FAA to increase the efficiency and enhance the capacity of the system can and should be accomplished safely within the current workforce levels.

Two of the procedural recommendations currently undergoing review at the FAA involve excessive miles-in-trail separation, regardless of altitude, and what the airlines deem to be excessive gate holds at originating airports.

The standard separation criteria used in the en route portion of the air traffic control system consist of 5 miles horizontal separation between aircraft *or* a minimum of 2,000 feet vertical separation between aircraft at jet cruising altitudes. No one advocates any change in these basic criteria.

What has become routine since the PATCO strike, however, is an increase in nose-to-tail separation beyond the 5 mile standards to distances as great as 30 and 40 miles, *and* additionally requiring that kind of excessive spacing regardless of the aircraft's altitude. To illustrate this point, an aircraft flying at 29,000 feet and another one traveling at 39,000 feet can be separated by the controllers for up to 30 miles nose-to-tail even though there is almost 2 miles of airspace between them vertically. In order to maintain such separation in the two dimensional manner described above, controller workload is increased because the controller has to juggle the differing performance of several aircraft restricted to one track. Thus, current restrictions add to controller workload. In the preceding illustration, if the airplane at 29,000 feet is a Boeing 737 flying at its normal cruising speed of 400 knots and the aircraft following it at 39,000 feet is a Boeing 747 flying at its normal cruising speed of 480 knots, the controller would be forced to slow the 747 in order to maintain the original excessive horizontal separation.

It is my understanding that this ATA recommendation to return as soon as possible to the traditional horizontal and vertical separation standards is being viewed favorably by the FAA as a safe procedure and one which will reduce the workload on controllers.

The second recommendation, which I recognize has been the subject of some confusion, concerns what we refer to as "limited airborne holding." I believe concern over this stems from a misunderstanding of the recommendation made by ATA to the FAA. If, for example, a given airport nominally can accept 40 aircraft arrivals per hour, we have recommended to the FAA that in its flow planning process it use a figure of perhaps 44 or 45 arrivals per hour, because long experience has shown that these aircraft will actually flow freely and little holding will result. Occasionally, holds might be necessary. The purpose of this recommendation is to get maximum utilization of the available runways, which is not achieved often enough even at the busiest of airports. It does not mean that the airlines are advocating massive holding stacks of aircraft and the elimination of all gate holding. In addition, it should be remembered that all pilots and controllers are well trained and tested in their ability to fly and control holding patterns, and that airborne holding already safely occurs daily when conditions require it.

(3) Regarding how deregulation has affected spending by the airlines on preventative maintenance:

It has been suggested erroneously that airlines are spending less on maintenance as a way of cutting costs at a time when their airplanes are getting older and they should be spending more for maintenance. First, airlines are spending more on maintenance, more than $5 billion a year, than ever before. That is mainly because the airline fleet is larger than ever and today's hub-and-spoke, highly competitive marketplace demands extremely reliable equipment. The only way to ensure such reliability is to go the extra mile in maintenance. An airline derives no real advantage over its competition—and in fact, could be disadvantaged—by postponing or delaying maintenance because sooner or later airplanes will have to be taken out of service when the lack of regular and preventative maintenance catches up with them.

As the percentage of new generation airplanes in the fleet climbs higher and higher, I fully expect the unit cost of maintenance to decrease. Today's airplanes benefit from vastly improved design and materials and systems reliability. All of these contribute to reduced maintenance costs. Even the older airplanes in the fleet benefit from new and more efficient maintenance techniques and from modifications to remedy recurring in-service problems.

(4) Regarding the effectiveness of the FAA's efforts to add safety inspectors and restructure its surveillance program:

ATA believes that the FAA should be given the resources required to maintain an effective inspection and surveillance program. Recent FAA initiatives to add to the number of inspectors, as recommended by Congress, should bring positive results in the years ahead as these inspectors gain familiarity and experience with air carrier operations. Airlines hold themselves to the highest possible safety standards but also fully support the need for an adequate and competent government inspection program.

(5) Regarding recent FAA proposals to expand and make uniform the Terminal Control Areas at the nation's 23 busiest airports:

ATA is advocating effective revisions to Terminal Control Area (TCA) configurations and related regulations, including seeking expanded requirements for automatic altitude reporting by general aviation aircraft.

The mid-aid over Cerritos last year and the recent Salt Lake City commuter accident tragically highlight the need for changes in the structure of airspace around busy commercial airports. These accidents also illustrate the need to upgrade the level of safety equipment required aboard aircraft that enter that airspace.

Airlines do not wish to deny access to busy airspace to any class of aviation. What we do seek, however, is that all who use the airspace are properly trained and their airplanes are properly equipped to ensure public safety.

If, for example, that means that some general aviation airplanes must buy several hundred dollars worth of altitude-reporting equipment in order to use busy terminal and en route airspace, then clearly they should do so. There is no doubt that general aviation flying is already an expensive proposition for most pilots and that our proposal will increase that cost. But the truth is that safety costs money. In this case, the money for altitude-reporting capability would buy significant increases in air traffic control safety now and in the future.

To achieve this goal of more widespread automatic altitude-reporting capability on general aviation aircraft, and to effect other, closely related changes in accuracy and maintenance of equipment, ATA petitioned FAA for rulemaking on March 25, 1986. We strongly recommend close and continuing congressional oversight on these matters to assure prompt action in the rulemaking and implementing phases.

(6) Regarding the need for Traffic Alert and Collision Avoidance systems aboard all commercial aircraft:

Our airlines are working to complete the operational validation of TCAS II and pursue further development by the FAA of TCAS III specifications.

This committee has heard ATA's views on the TCAS collision avoidance system on several occasions. We continue to believe that TCAS-II, the version approved by the FAA for testing in airline service, should be pursued with vigor. A system with enhanced capability, known as TCAS-III, should also continue to be developed for possible future installation. The Air Line Pilots Association and the airlines have different views as to the exact equipment and timing of installation of collision avoidance systems. However, we strongly concur in the goals and absolute necessity of accomplishing major advances in this area as soon as possible. The TCAS technology will provide, without question, a reduction in the risk of mid-air collision.

(7) Regarding the need for increased FAA involvement in ensuring that cabin safety is enhanced:

The airlines believe that the FAA is sufficiently involved in cabin safety enhancement, but that agency actions in this area could be improved through better coordination of the research and development and regulatory planning process. For example, in several areas of current emphasis such as cabin materials flammability standards and seat strength standards, the FAA should take better advantage of other government and industry research and testing resources.

In the case of flammability standards for cabin interior materials, aircraft manufacturers have provided the FAA with enormous amounts of test data crucial to the rulemaking process and yet much of industry's technical input apparently has been ignored. The airlines and manufacturers proposed a more realistic and effective test method to determine what materials were desirable.

In the area of seat strength, all of the actual testing of airline seats under new dynamic testing conditions has been conducted by industry. The results of this testing should provide the empirical basis for progressive, accurate rulemaking.

After responding to the committee's specific questions, I want to take this opportunity to add here a few thoughts of our own on important safety issues. The airlines are responsible for safe air transportation and we would like you to know how we intend to continue to improve on our already excellent safety record.

Air travel now accounts for 90 percent of all public intercity transportation and this industry's first priority is to provide those travelers with the highest possible level of safety. Reflecting that commitment is the fact that last year, the major U.S. airlines flew more than six million flights—more than 17,000 flights every day—and did not have a single passenger fatality.

That safety record was the direct result of the day-in and day-out hard work of all of the more than 400,000 men and women in the airlines and the people of the Federal Aviation Administration, notably the hard-working controller and maintenance workforce. Safety happens because they make it happen.

Over the long-term, safety records have tended to improve because the people of the aviation industry were unwilling to settle for the status quo. They have always known that to become complacement was to become less safe. Therefore, Mr. Chairman, let me reaffirm this commitment to you today that the airlines have no intention of resting on their laurels. There is no room for complacency in the skies.

This leads me directly to the ATA safety agenda for 1987. Each year we compile a list of priority safety objectives and associated work plans as a way of best focusing our time and resources.

At the top of our list of safety objectives for this year is a series of steps intended to reduce the risk of collisions. I have given you our thoughts on this objective and I ask your support for our initiatives.

Other items on the ATA safety agenda seek to reduce the risk of wind shear accidents. We are pushing for improvements to current ground-based wind shear sensors and for the Terminal Doppler Weather Radar program. We are also seeking the development of airborne wind shear detectors that will provide early warnings to pilots about conditions ahead of them.

This year's safety agenda also includes action items in the human factors area, pilot training and checking, and security and anti-terrorism.

Most of these safety challenges require not only industry dedication but government action to dedicate the resources, to spend the huge sums of money in the Aviation Trust Fund that airline passengers and shippers have already paid.

Mr. Chairman, I have given you our thoughts on some of the more important near-term safety enhancements, particularly those relating to air traffic control. I must express my concern, however, that unless our nation takes actions promptly to enhance the capacity of our airways and airports system, the safe and efficient growth of air tansportation in the 1990's and beyond will be thwarted. The past successes and future promise of deregulation will be erased if there is a failure of vision, of courage, of leadership and pride.

As I previously noted, the FAA forecasts that within the next decade U.S. airlines will carry more than 620 million passengers annually. We believe this is a conservative estimate. My concern and that of our industry is that the modernized infrastructure necessary to meet this public demand will not be forthcoming, even though there is and will be plenty of money available in the Aviation Trust Fund to do the job.

In the coming weeks and months, we in the airline industry are going to hammer hard the fact that our passengers and shippers have paid huge user fees for aviation safety and efficiency improvements, but this money in large part has not been used for the purposes for which it was collected. That is a disgrace.

So today, we have the unbelievable situation where the Aviation Trust Fund has a surplus of more than $4 billion—and the General Accounting Office predicts $10–$12 billion by 1990 at current spending rates—while urgent aviation modernization needs go begging.

I recognize that in the past the 8 percent domestic ticket tax paid by our passengers has been a "no squeak" tax. We intend to put the squeak in that tax of $3 billion a year and to make sure that the money collected from our passengrs and shippers is spent for aviation modernization.

Looking farther down the road, we are convinced that fundamental changes in the management and funding of the nation's air traffic control system are essential. That is why our industry is advocating the establishment of a National Aviation Authority, or federal corporation, to replace the bureaucratic, politicized and outdated approach required under the existing governmental structure.

Other proposals that have been advanced in this area, such as making FAA an independent agency again, or getting FAA off the unified budget, or establishing a trigger mechanism for the Aviation Trust Fund, are worthwhile goals and would be improvements. However, they represent only interim steps toward solving aviation's long-term needs and do not insulate ATC funding and management from partisan political influences.

Air transportation is too important to our nation to permit continuation of the deficiencies inherent in the traditional blueprint for funding and managing the air traffic control system.

As we head into the 1990's, we will need to cultivate and support innovation and flexibility in air traffic control matters. In this regard, we hope this committee will agree with us that extensive delays and other inefficiencies in the air transportation system are unacceptable and that we must have in the years ahead a safe and efficient system that will be a source of pride and increasing employment opportunities for Americans in all our 50 states.

Air travel is a key component of the national economic foundation. The airport and airway system must be operated to meet the nation's demand. The nation can not be restrained by the limitations of a poorly designed system.

We seek your support and leadership in these vital issues facing the U.S. air transport industry, as well as general aviation.

[The following information was subsequently received for the record:]

QUESTIONS OF SENATOR KASSEBAUM AND THE ANSWERS

Question. One of the disturbing questions continually being brought to my attention about the idea of a federal corporation is the question of safety. Specifically, the idea of a federal corporation is being supported by the airlines as a solution to operational efficiency. While the FAA is, granted, not always the most efficient operation, its primary mandate is safety, not efficiency. From everything I have seen so far, safety is not the prime consideration of such a corporation. Would you care to comment.

Answer. Safety is and will always be the prime consideration of any operation of the air traffic control system. The ATC system exists because it would be unsafe to fly without it. But, in fact, when the system does not work efficiently, safety is maintained by reducing capacity whenever the resources of the present infrastructure cannot meet demand. This can only lead to greater limitations on present and future operations—to the economic detriment of all aspects of the aviation industry from airlines to passengers—unless the cause of the structural deficiencies are corrected.

The system is safe and must remain so, but it should also be our goal to accommodate public demand. Capacity must be increased to meet that demand. ATA has worked with the FAA to achieve short-term capacity improvements consistent with continued maintenance of the highest levels of safety. The efficiency improvements of the expanded East Cost Plan demonstrate that there is unused capacity in the system that can safely be utilized through adoption of new techniques. But for the longer term the structural deficiencies inherent in traditional government procurement budgetary, and personnel strictures threaten delivery of a no growth future. In fact, current equipment must be replaced simply to assure continued safe operation of the ATC system. Safety is our highest priority too—but we also care deeply about efficiency. The two need not be—and are not—either in our opinion or in our draft legislation, incompatible. Both safety and efficiency are essential to the economic and national interests of the United States.

ATA's proposal envisions separating the operation of the ATC system from the FAA regulatory and safety functions. ATA commissioned a study by a former FAA Director of Air Traffic on whether taking ATC functions out of FAA would diminish safety. That study concluded that those functions can be safely separated in a different structure and with highly efficient results. (A copy of that study is attached for the record). In fact, within FAA today there are clear demarcations of safety authority and operations responsibility, and separation along these lines would not be a radical change. A new government corporation that took the ATC operations out of FAA would continue to govern safety standards for the FAA.

Question. ATA has been requesting the FAA to allow airlines to take off on time—as much as possible—and to thus handle as much airborne holding as would result. Yet there are many who believe such a policy would create unnecessary and unsafe burdens on the air traffic control system for no purpose other than allowing the airlines to placate passengers. Could you comment?

Answer. Unfortunately the general perception of the term airborne holding is one of large numbers of airplanes circling for long periods of time while they wait for their turn to land at the airport. This perception creates the impression of a traffic jam in the sky with air traffic controllers trying to keep them safely separated.

This is actually a misperception of the ATA initiative which has been put forward to the FAA. With the current state-of-the-art of weather forecasting, en route flight planning for trips two hours long is only accurate within six to eight minutes. When this error is compounded with the limited precision which can be achieved in estimating air traffic control en route flow we are frequently faced with significant gaps in the arrivals at an airport because there are no airplanes available to use the real capacity of the airport. What ATA is advocating is the use by FAA of a limited amount of airborne holding in their flow control planning to assure that there will be a small cushion of traffic in the queue to productively use the actual airport capacity rather than have airplanes sitting on the ground two hours flying time away.

In a technical sense ATA's use of the term "airborne holding" is correct; however that use has created a misperception of what we are advocating. On a pragmatic basis the airlines have no desire for unlimited airborne holding. With the cost of flying a transport aircraft averaging about $40 per minute, the airlines clearly have no desire to dispatch airplanes to a destination nor is it believed that the needs of air travelers are best served when flights have to be held for extended periods of time. The use of limited planned airborne holding as a factor in flow control planning does not impose unnecessary or unsafe burdens on the air traffic control system because frequently the holding would not actually occur or when it did occur the actual number of aircraft holding would be planned to be so low that no undue burden would be placed on the controllers. In many respects controlling an aircraft in a holding pattern is less demanding than vectoring a string of aircraft to maintain arrival separations.

Moreover, airborne holding is a safe and necessary contingency procedure of the air traffic control system. For example, when operations are unexpectedly interrupted at an airport and landings halted, the airborne aircraft are cleared by ATC to hold at designated holding fixes until landings resume or it is decided to proceed to an alternate airport. Unplanned holding is not an uncommon experience. The ATA proposal for limited airborne holding would not be initiated if unplanned holdings was already in effect at a particular airport and therefore would not be adding holding above current levels already accommodated today.

Senator FORD. Fine. Thank you, General.

Mr. Stephen.

STATEMENT OF ALAN STEPHEN, VICE PRESIDENT, REGIONAL AIRLINE ASSOCIATION

Mr. STEPHEN. Thank you, Mr. Chairman.

I was struck yesterday in listening to the comments of the Senators of this Committee, and how there has obviously been a great deal of concern over the state of aviation safety, but not one Senator has called for the prompt reactment of the Airport-Airways Legislation. We are eight months away from that legislation. That is the legislation by which we authorize, and eventually appropriate money for the vital improvements to our airports and airways, to our research and aeronautical engineering that is necessary for safety and capacity, and I can tell you right now that nothing more important can be done for aviation safety than the prompt reenactment. I know the good Members of this Committee share that, and I hope the 100th Congress can make that a very, very high priority.

Regional airlines posted their safest year ever in 1986. It is the seventh year out of the past eight in which we have achieved a better safety record. We have gotten there in large part because of the very constructive attitude towards NTSB and the FAA in implementing the NTSB safety recommendations, by petitioning the FAA for rulemaking, and of course through our industry voluntary programs.

Our major concern to our industry over the past few years, and obviously to the Congress, and the questions that have been asked of us when we have appeared in the last few years, has been the issue of pilot turnover and experience.

In our view, the problem is not experience, but one of training. We are able to continue to be able to hire pilots with well in excess of the minimum standards set by FAA regulation. Our problem, however, has been that the quality of regional airline training programs has lagged our industry needs in large part because FAA regulation up until now has made flight simulation impossible for regional airlines to afford.

I am very pleased to report today that we have reached a major breakthrough with FAA in this important area. We have been able to define a performance standard and an operational credit standard for a new class of affordable commuter airline flight simulators called "Advance Training Devices." These non-motion simulators will permit Part 135 commuter air carriers to adopt Part 121 training programs, and we are very close to seeing that standard in place.

In conjunction with the adoption of this advanced training device standard with FAA, we have petitioned the FAA for authority to permit Part 135 commuter air carriers to adopt Part 121 Major Airline Training programs. We think that will do a lot for safety. There is the question, why would we voluntarily go for a higher standard? The answer is very simple. It is an issue where safety and economics mesh.

From an economic point of view, it is cheaper to train in the simulator on the ground than it is to fly an airplane. From a safety point of view, you can do things in the simulator, such as cockpit resource management which trains pilots as a flight crew standard, that you cannot do adequately in an airplane.

We are awaiting publication of an advisory circulator which will define the advanced training devices. It is in final draft, and I think the FAA will be publishing it within the next 30 days. We are very confident the FAA will move quickly on the regulatory authority we have asked for.

1986 also saw air traffic delays reach record proportions. All too often weather and airline scheduling have become easy targets upon which to fix blame. In actuality, there is plenty of system capacity out there that unfortunately continues to go unused or lost because of FAA budgetary constraints, or by an unwillingness on the part of the Agency to return to prestrike air traffic control procedures that were proven safe over many years.

It is not difficult to cite some examples. We have a severe shortage of maintenance technicians to keep our airways and air navigation facilities on line. If we lose a critical approach fix at a major airport because it fails, if we cannot repair that, the longer it stays off the air that impacts capacity.

We also have three billion dollars in backlog and approved airport grant projects sitting at FAA. Those projects have an impact on runways, and taxiways, on ramps, and that is capacity-related. I can tell you that many of the airports that are served by commuter airlines at smaller airports, this funding problem has severely curtailed improvements to those airports both from an airport and from an air navigation point of view.

We are pleased that the FAA continues to make significant progress in the area of rehiring controllers, or hiring controllers, but the point we have now is that we have to get back to some of those procedures that make a lot of sense, such as limited airborne holding, and to review the entire aircraft spacing standards.

One final point I would like to raise is the recent mid-air over Salt Lake City involved one of our member carriers. That accident should not have happened, and it is a very serious concern to our organization and to our industry.

The FAA should do three things right now as we await the commercial deployment of a TCAS system. One, is require that general aviation airplanes, all airplanes that operate within all terminal control areas, airport radar, service areas, and at other airports where there are significant amounts of commercial activity, to be equipped with so-called Mode C altitude reporting equipment. The time has come for that.

The second is the FAA should proceed without any delay in implementing that improvement to those terminal area radars that will give a VFR conflict alert so the controller will be given the information when the type of situation we have where a general aviation airplane inadvertently gets into the air space we have some warning that can be relayed to the cockpit of the airliner.

Third is that we have a major training job to do to get out and reach the public, the general aviation public, about these types of airspace so they do not inadvertently get into it and they understand the procedures. I believe it was very interesting that those were exactly the same three recommendations that Chairman Burnett of the NTSB made yesterday.

Thank you for your attention.

[The statement follows:]

STATEMENT OF ALAN R. STEPHEN, EXECUTIVE VICE PRESIDENT, REGIONAL AIRLINE ASSOCIATION

I am Alan R. Stephen, Executive Vice President of the Regional Airline Association. On behalf of our member air carriers, I appreciate the opportunity to appear here today to discuss air safety issues.

We welcome your leadership in holding hearings now on this most important subject. In just eight months, the Airport and Airway Improvement Act of 1982 will expire. With it expires the authorization by which critical investments are being made in airport development, in our system of air traffic control and air navigation and in safety and capacity related research and engineering. We urge you, therefore, to make reauthorization of the Aviation Trust Fund—with safeguards to protect the integrity of its user funded programs—a high priority for the 100th Congress. No other single action can do more for air safety than prompt enactment of this legislation.

REGIONAL AIRLINE SAFETY

Regional airlines posted their safest year ever in 1986, the seventh year out of the past eight in which this record has improved. Over the years since deregulation when Congress directed that commuter airline safety be equal to the maximum practical extent to the safety of major airlines, we have taken an aggressive role in addressing the underlying causes of our accidents, by implementing NTSB safety recommendations, through FAA rulemaking and through voluntary industry programs. But, as the recent tragic mid-air collision over Salt Lake City so unfortunately underscores, regional airline safety also can be influenced by circumstances beyond the control of our management, our flight crews or FAA's Air Traffic Service.

Of major concern to our industry over the past few years has been pilot turnover. In our view, the problem is not one of experience, but of training. Regional airlines continue to be able to hire pilots with well in excess of the minimum experience required by FAA regulation. However, the quality of regional airline training programs has lagged our industry needs in large part because FAA regulation up to now has made flight simulation impossible for regional airlines to afford.

I am pleased to report that we have just reached a major breakthrough with FAA in defining performance standards and operational credits for a new class of affordable commuter airline flight simulators called *A*dvanced *T*raining *D*evices. These non-motion simulators will permit Part 135 air carriers to adopt Part 121 training techniques such as Line Oriented Flight Training that otherwise cannot be practically accomplished by training in an actual aircraft in flight.

In conjunction with the adoption of a standard for ATDs, the Regional Airline Association has petitioned the FAA for regulatory authority that will permit Part 135 air carriers to adopt Part 121 training programs. Part 121 is based on a standard in which flight crews are "trained to proficiency" rather than on a standard of "demonstrated competency" that Part 135 requires.

Why would regional airlines want to voluntarily adopt the more extensive training requirements of Part 121? Because training is a subject where economics and safety mesh. Many regional airlines already have Part 121 training programs because they operate Part 121 sized aircraft (aircraft seating over 30 passengers).

Under FAA's current rules, they must maintain separate systems of pilot training, recordkeeping and testing for their Part 135 aircraft (aircraft seating 30 passengers or less).

Under our proposal, such dual operation regional airlines could train all their pilots to one standard. Further, by using Advanced Training Devices in place of flight in actual aircraft, all Part 135 regional airlines could save substantially on operating costs. Safety is improved, since regional airline flight crews will receive more extensive training in skills such as Cockpit Resource Management.

Shortly, the FAA will publish an Advisory Circular that will define Advanced Training Devices. We are confident that the Agency will also take prompt action on our petition so that the benefits of these devices can be realized by regional airlines in the not too distant future.

AIR TRAFFIC ISSUES

The year 1986 saw air traffic delays reach record proportions. All too often, "weather" and "airline scheduling" have become easy targets upon which to fix blame. In actuality there is plenty of capacity in the air traffic control system that unfortunately continues to go unused or to be lost because of FAA budgetary constraints or by unwillingness on the part of the Agency to return to pre-strike air traffic control procedures that were proven safe.

It is not difficult to cite how FAA budget constraints affect capacity. FAA has a severe shortage of airways maintenance technicians, slowing its ability to return to service air navigation facilities in need of maintenance or to commission new facilities as part of the National Airspace Modernization Plan. The backlog of eligible and approved—but unfunded—airport improvement projects (including those such as runway extensions, additional high speed taxiways, and new ramps) continues to grow and now totals more than $3.0 billion. Further, installation of precision approach aids, radars and other capacity and safety-related devices at many of the smaller commercial service airports commuters serve impacts reliable, on-time service. These are issues, we believe must be addressed as part of trust fund reauthorization.

While we are pleased that the FAA continues to make significant progress in meeting ATC system staffing targets, we believe the FAA has been slow to correct air traffic control practices that decrease capacity that are no longer necessary for safety. Virtually the entire aviation community is joined, for example, in asking the FAA to return to limited airborne holding and to review entrail aircraft spacing standards.

The recent midairs at Cerritos and Salt Lake City have once raised questions about collision avoidance. Practical deployment of airborne collision avoidance systems remains in the future. However in the meantime, the FAA can take steps that will greatly improve the safety of the airspace environment by lowering the risk of mid-air collisions.

First, the FAA should give highest priority to rulemaking that will require aircraft operating in all Terminal Control Areas (TCAs), Airport Radar Service Areas (ARSAs) or near other designated airports with significant amounts of commercial air traffic activity not protected by such controlled airspace to be equipped with altitude reporting transponders (Mode C). Second, the FAA should give priority to upgrading terminal area air traffic radars to provide controllers with so-called "VFR traffic conflict alert" capability. Third, the FAA must move forward with the pilot education program announced last fall to assure that general aviation users flying near or in controlled airspace understand its requirements to avoid inadvertent penetration.

FAA SURVEILLANCE PROGRAM

Finally, the FAA is making progress in restructuring its airline safety inspection program. The RAA has consistently supported such efforts because we view FAA surveillance as much as a "quality control" function as it is "cops on the beat." More and better trained inspectors accomplishing more thorough and consistent surveillance of airline operations and maintenance practices promotes the highest degree of compliance.

Thank you for your interest in the views of the Regional Airline Association. I can assure you that our industry will continue to make every effort to assure safety of the skies.

[The following information was subsequently received for the record:]

REGIONAL AIRLINE ASSOCIATION,
Washington, DC, March 26, 1987.

Hon. ERNEST F. HOLLINGS,
Chairman, Senate Committee on Commerce, Science, and Transportation, Washington, DC.

DEAR MR. CHAIRMAN: The Regional Airline Association (RAA) appreciates the opportunity to provide a response to a follow-up question derived from the Aviation Subcommittee hearings on January 29 and 30. The specific question, posed by Senator Kassebaum, is as follows:

"The FAA has announced that it is planned to impose new requirements for the installation of flight data recorders and voice recorders for smaller aircraft. Could you comment on the proposal?"

The RAA remains very concerned about the possibility of mandatory installation of this equipment on small turboprop aircraft, simply because the very large expense involved cannot be justified by any resulting measurable increment of safety. We believe that this money would be better spent on training devices or additional onboard equipment related directly to accident prevention.

The FAA Final Rule issued yesterday imposed a new requirement for cockpit voice recorders on newly manufactured multiengine turbine-powered aircraft certificated to carry six or more passengers. The rule applies to airplanes manufactured two years after the effective date of the rule and does not require retrofitting the existing fleet. The FAA estimated that the cost per aircraft of installing a CVR at the factory would be $10,100. The RAA believes that the cost estimates propounded by the FAA are greatly underestimated. Our survey of manufacturers has indicated that the actual installed cost of a reliable CVR would be between $15,000 and $20,000 per aircraft.

The FAA rulemaking did not address installation of Flight Data Recorders in smaller (fewer than 30 passenger) aircraft. It only requires an upgrade of existing FDRs on large propeller airplanes. A number of sources have recently advocated, however, that FAA issue rulemaking to require both CVRs and FDRs on smaller turboprops.

The RAA opposes any requirements for FDRs in the smaller aircraft. The cost per new aircraft of a reliable 17 parameter digital unit is in the neighborhood of $60,000. Less reliable systems are not acceptable in revenue service because the aircraft would be grounded until the FDR is repaired. At this time, we are not aware of any available reliable systems which are less expensive. We would, of course, reconsider our position, for CVRs and FDRs, if new technology equipment in a more reasonable price range becomes available, and if any future FAA proposals provide for the installation of that less expensive equipment.

Retrofitting the existing fleet of small turboprops (about 700 aircraft) with CVRs and FDRs would be considerably more expensive, per aircraft, than installing the equipment at the time of manufacture. RAA estimates that the cost per aircraft, including installation and certification costs, would exceed $100,000. This cost is obviously prohibitive, considering the value of the aircraft and their revenue producing ability. The RAA is strongly opposed to any rulemaking which would require retrofitting the existing fleet with both CVRs and FDRs.

Cockpit voice recorders and flight data recorders are clearly valuable tools for accident investigation. Their value in accident prevention is more abstract, however, particularly since the NTSB and FAA have generally been successful in determining the cause of small turboprop accidents without them. The RAA doubts whether the current large relative expense of these "black boxes" is justified by the uncertain increment of safety they would provide.

We hope that you find this information to be useful.

Sincerely,

JOHN S. FREDERICKSEN,
Executive Vice President.

Senator FORD. Thank you, Mr. Stephen.

Mr. Sheehan.

STATEMENT OF JOHN SHEEHAN, SENIOR VICE PRESIDENT OF GOVERNMENT AND TECHNICAL AFFAIRS, AIRCRAFT OWNERS AND PILOTS ASSOCIATION

Mr. SHEEHAN. Good morning, Mr. Chairman. Thank you for inviting us to this hearing. My apologies from my boss, John Baker, who had wanted to be here but is away on a trip.

We have heard that last year was the safest ever for the airlines, but that that fact was a single event. There was no trend involved. Well, I would like to share with you a very positive trend that occurred to general aviation over the last 14 years.

We, too, had our safest year in aviation last year, but there was a trend involved. That trend, I am happy to report, was that we have halved the general aviation accident rate, cut in half, over the last 14 years. This includes all accidents and the fatal accident rate. So there is a trend that we are very proud of.

We think the system is safe today. There is no doubt in our mind. We do know that there are many inefficiencies in the system that result in delays not only to air carriers but to general aviation aircraft, and those inefficiencies tend to deny the people using the system all the information they should have. That is, safety alerts and advisories, in addition to the separation information that we all rely upon.

There is capacity lacking also. We have heard all through yesterday and this morning that there are many solutions to the capacity problem. Unfortunately, we do not see many of these being enacted. I guess the biggest problem we see with the system, and we have heard this from other areas for more than five years now, is that the FAA does not have the ability to respond to the users' needs.

Now let me be a bit more specific about some of those items I have already mentioned. On the subject of air traffic control staffing, we feel that the goal of 15,225 controllers is adequate. The only problem is, you cannot talk sheer numbers. It is the quality of those numbers that count. As you have heard before, we do need some more FPLs out there, and there are ways to get those FPLs faster.

We need more innovative training schemes within the FAA to accelerate this process. They are available. They are just not being exploited. We feel there is a serious problem with regard to controller capacity to provide information. That comes from the fact that in addition to separation of aircraft that controllers are supposed to give alerts and safety advisories to aircraft in the system—that is, advisories that there are other airplanes out there that they should be looking for.

This is not happening, and we feel the reason this is not happening is a combination of experience of controllers, the sectorization in the terminal areas, and the fact that there is inexperience.

The next subject is terminal control areas and how we feel about the expansion of these areas.

First let us look at the background purpose of the terminal control area. It was originally instituted years ago with the thought that it would provide a higher level of protection for high-speed traffic in major terminal areas. Now using that as our guide, it seems to me that the design of these areas is critical. It should reflect the actual flows of traffic and point out the potential areas of conflict.

We do not think this has ever happened. The way the TCAs have been designed is a large blob of sanitized airspace has been put over major terminal areas that does not recognize the critical traffic flows. In simplifying and redesigning the system, which the FAA has stated that they are dedicated to this.

Also, please realize that if you make the terminal control area larger even by a small increment, it complicates the problem of separation and the ability of controllers to control that traffic.

Finally, on TCAS we support the inclusion of TCAS on turbojet air carrier aircraft, and when that happens we will be glad to recommend that all general aviation aircraft flying in the busy terminal areas be equipped with altitude coding transponders.

Finally, I think one of the big answers to the system safety is to make sure that the national airspace system plan works as it is proposed. We heard a very sad fact yesterday. Parts of the plan are more than eight years behind, which is an amazing number since the program is only about six years old.

This plan is going to buy us system safety. We are going to have to hold the FAA's feet to the fire to make sure this program is well managed, and that it gives the traveling public the type of equipment and the system that it needs to be safe.

Finally, a plug for the aviation trust fund. Freeing up the aviation trust fund to allow those moneys to be expended on doing things like the NAS plan is an essential element of this.

Thank you very much.

[The statement follows:]

Statement of John J. Sheehan, Senior Vice President, Aircraft Owners and Pilots Association

Mr. Chairman, I am John J. Sheehan, senior vice president for government and technical affairs with the Aircraft Owners and Pilots Association (AOPA). AOPA represents the concerns of 260,000 general aviation pilots who fly for business and personal transportation. We appreciate the opportunity to present out views on safety and their air traffic control (ATC) system and, like this subcommittee, are dedicated to improving the world's safest transportation system. General aviation represents a true cross-section of the aviation community, and as the operator of 98 percent of all civil registered aircraft, is the chief beneficiary of the system safety improvements.

As the majority user of the ATC system and most other aviation services, general aviation is involved in virtually every aspect of air transportation and therefore is acutely concerned with safety, modernization and training issues. The midair collisions which have occurred during the past six months have increased our concern with the government's ability to provide basic safety-related resources and to manage an ATC system with adequately trained personnel.

There is no easy solution to the complex air traffic problems in the nation's airspace system. However, the time is long overdue for us to work together to answer is not reduce growth, reduced access, increased delays, increased equipment costs, or inefficient use of airspace and runways. Much of what needs to be improved in the nation's airspace can be accomplished by simply improving procedures without the need for more equipment or more public funding. However, there is a clear need to release Aviation Trust Fund moneys to build new runways and buy new computers to increase system capacity and reduce delays.

ATC Staffing and Experience. We believe FAA should accelerate the hiring and training of air traffic controllers to quickly alleviate what have become "standard" six-day work weeks at many ATC facilities. Former PATCO Controllers should not be rehired since these controllers clearly went outside the lawful system in order to effect desired changes instead of working from within to improve ATC conditions. Our association does not advocate that pilots disregard ATC rules and procedures which are not to their liking; rather, we work within system requirements to make improvements. As pilots working within the system, we cannot condone the rehiring of controllers who apparently are not willing to do the same.

FAA should improve the training system for air traffic controllers to bring new controllers up to full performance status more efficiently and more rapidly. One controller training program has demonstrated a remarkable degree of effectiveness in Seattle. This program uses live radar images to train controllers in real-world conditions. It has demonstated tremendous promise, and the FAA should consider nationwide implementation of this innovative and low-cost program.

We see a problem with controller experience not so much in terms of tenure, but rather in terms of controller capacity to handle current levels of traffic. Many controllers are unable to work traffic efficiently enough to provide non-separation services such as traffic advisories and safety alerts on a routine basis. The specific source of this "controller capacity" problem is difficult to pinpoint, but we believe it is a combination of staffing levels, full-performance achievement, and the degree of thoroughness in initial training.

Terminal Control Areas. Beginning nearly 30 years ago, it was realized that certain areas of the airspace require a higher level of air traffic control in recognition of either terminal area congestion or high speed/high altitude operations. The airspace and ATC system responded to these needs incrementally, requiring transponders and positive control in a variety of areas. The development of Terminal Control Areas (TCA) was an attempt to assure traffic seperation at the most congested airports and terminal areas.

General aviation has worked with the FAA and other user groups to define these areas, attempting to balance a degree of control with activity levels and safety benefit. While we have provided informed opposition to much of the TCA process, we have always attempted to accommodate these changes with the highest degree of safety in mind. Much of the airspace has become closely controlled, and general aviation has been playing by the rules of this increased control in an effort to make the system safer.

Our most pressing concern involves the reason for and subsequent design of terminal control areas. The goal of a TCA is the protection of the predominant air carrier flows from surrounding traffic, and, as such, the redesign of TCAs should be viewed as a unique event for each individual location. Merely expanding the airspace will not simplify a design problem. Please understand that we at AOPA have for many years advocated TCA simplification and asked NTSB to look into this issue after the Cerritos accident. In fact, expansion of an airspace segment may create even more problems, as we have noted, and increased controller work load to unacceptable levels. Perhaps the best method of separating air carrier flows from surrounding traffic would be to orient climb-and descent corridors to match those flows.

We believe that any FAA changes regarding the size of terminal control areas—and especially any changes that will increase their size—must first take into consideration the capability of ground-based ATC radars and radar computers, as well as the ability of air traffic controllers to handle near-saturation work loads in terminal environments. Otherwise, they will be putting the cart before the horse. At the NTSB hearing on the Cerritos accident in early December, many problems with the ARTS radar computer surfaced that were apparently not well understood or known. Even some FAA personnel publicly voiced concern about whether the ATC system could handle the increase in information that would occur if several of the FAA proposals were implemented—specifically, widening and raising the height of TCAs and requiring all aircraft in the vicinity of the TCA environment to be equipped with Mode C altitude encoding transponders. If all this additional information were too much for either controllers or equipment to integrate, and, as a result, were to force air traffic control personnel to suppress some information, we cannot see how this would lead to a safer aviation environment. Thus, AOPA has serious concerns regarding the FAA proposal to increase the size of TCAs and to mandate Mode C in the vicinity of terminal control areas.

AOPA has been an official party to a number of NTSB midair collision investigations. Because we feel that the complexity of the airspace could be a major factor in these accidents and potentially for others, we have requested that the NTSB include an evaluation of all terminal airspace as a part of midair investigation. We are pleased that the FAA is conducting a review of all TCAs with an eye toward addressing unnecessary complexity and enhancing efficiency. We urge them to accomplish this rapidly, with both safety and economy in mind.

In summary, once a block of airspace has been designated for an increased level of control, the ATC system must be able to properly utilize this area to provide the desired degree of control. There must be adequate equipment, people and procedures to make the system work.

The ATC system has shown itself to be capacity-constrained at many of the major terminals and in some enroute areas. Any greater degree of control or geographic expansion will require additional resources. The desire for increasing levels of control and advisory information must be examined in light of the ability of the system to absorb these additional burdens.

Transponders.—Before transponders are required in more aircraft, the ability of the ATC system to effectively use the additional information must be examined.

For instance, merely equipping all aircraft with Mode C altitude-reporting transponders will not provide a significantly greater degree of separation assurance in busy terminal areas. Although the controller will be presented with additional data, his ability to use this as information is doubtful. Statistics generated by the FAA show that many of the most serious midair collisions have occurred when one or both aircraft involved in the collision were in fact equipped with transponders and were communicating with and were tracked by air traffic control. Mandatory equipage with transponders will not eliminate midair collisions.

Traffic Alert and Collision Avoidance System.—The FAA has spent more than $41.5 million in an effort to create a viable TCAS device. Still, the FAA is a long way from a production model TCAS, despite the large investment. Most TCAS advocates agree that horizontal and vertical resolution advisories are necessary to any successful application of TCAS.

AOPA believes that the implementation of TCAS must be evaluated in light of:

(1) Its potential to provide demonstrable improvements in system safety.

(2) The merits of committing resources to one solution rather than another in order to achieve the greatest possible improvements in safety and system utility. This demands that we adequately identify benefits and that other deficiencies in the ATC system, the correction of which might provide greater margins of safety, not be ignored.

AOPA supports development and implementation of TCAS for air carrier use and will encourage its members to equip with cooperative transponders in airspace where the density of TCAS-equipped aircraft justifies that expense.

Which TCAS.—The committee is aware that TCAS has been defined at three levels of performance. They are:

TCAS I, which provides only rudimentary traffic advisories it does not recommend "escape" maneuvers.

TCAS II, which provides traffic advisories plus vertical-only escape maneuvers.

TCAS III, which provides traffic advisories plus both horizontal and vertical escape maneuvers.

AOPA believes that TCAS I would provide inadequate service even within good radar coverage simply because it provides such limited information to the pilot. Industry sources tell us that TCAS I will cost $15,000 a unit and that the device will physically be relatively large. These two facts suggest that it will be unsuitable for most general aviation aircraft. Further, with TCAS I limitations, it is clear that a ground-based radar/controller ATC system provides the acceptable level of service for general aviation. As a result, we believe that only a small percentage of the 220,000 general aviation aircraft would be equipped with TCAS I.

TCAS II will cost approximately $80,000 a unit. Potential airline users claim that the vertical-only resolutions provided by TCAS II can direct pilots to exceed aircraft operating and structural limits. Therefore, AOPA believes that TCAS II service capability does not justify its estimated expense of $80,000 per aircraft.

TCAS III will cost more than $100,000 a unit and will be suited only to air carrier operations and more sophisticated general aviation aircraft. The cost of fitting the approximately 4,000 air carrier aircraft will exceed $400 million, and of the TCAS alternatives, only TCAS III seems to have reasonable potential to improve system safety.

In summary, we should expeditiously develop collision avoidance systems (TCAS) for nearly 3,000 airlines. Both the Air Line Pilots Association and AOPA agree that these devices will provide an extra measure of safety. General aviation aircraft operating in the high density terminal airspace should be equipped with cooperative devices such as transponders if the air carriers equip their fleets with TCAS.

No discussion of collision avoidance equipment can take place without considering "see and avoid" as the primary traffic collision avoidance procedure. It must be remembered that any mandate for transponders or TCAS clouds the primacy of the basic method of separation by pilots of all aircraft and ATC. This procedure, "see and avoid," has been responsible for the prevention of more collisions than any other technique. Its continued use is predictable and necessary despite some limitations. Other methods of separation such as radar and TCAS have more serious shortcomings and are internationally recognized as supplemental to "see and avoid."

While "see and avoid" is the primary means of separation, there is no doubt that the use of transponders and transponders with Mode C altitude-reporting capability are significant aids to the controller in providing conflict resolution.

Aviation Trust Fund.—Billions of dollars paid by users of the airspace system are not being utilized. The uncommitted balance in the Aviation Trust Fund, now more than $4 billion, is growing faster than ever in its 15-year history. This surplus represents user tax revenues held hostage in the war on deficit reduction.

The large Trust Fund surplus is an irresistible target, and the Administration has proposed legislation to fund 85 percent of the FAA's FY 1988 operating costs from the Trust Fund. We believe this to be a direct contradiction of the purpose for which Congress established the Trust Fund. We strongly oppose this "raid" on system users' equity in future NAS program development and safety.

AOPA believes that a legislative solution must be reached in order to free the Aviation Trust Fund from the constraints of the Federal Unified Budget where user taxes are used to shelter other spending from the General Fund. For these reasons, AOPA supports legislation to take the Aviation Trust Fund "off-budget" but continue it as a part of the annual federal appropriations process. We encourage your efforts to ensure that the Trust Fund is actually used for the purpose for which it was intended—enhancement of the utility and safety of this country's airport and airway system.

Summary.—In conclusion, there are air traffic and airport capacity problems, and there is no easy solution. However, the time is long overdue for us to work together to address the real airport and ATC system capacity problems. Again, the answer is not reduced growth, reduced access, increased delays, increased equipment costs, or inefficient use of airspace and runways. Much of what needs to be improved in the nation's airspace can be accomplished by simply improving procedures without the need for more equipment or more public funding. Clearly, the release of Trust Fund monies will be required to increase airport-related capacity.

We feel that the air traffic terminal environment could be enhanced now to improve both safety and capacity. Accordingly, we have written to members of both the House and Senate aviation appropriations and authorizing subcommittees, asking for their assistance in accelerating the implementation of the following programs:

Automated Radar Terminal System (ARTS) enhancements;
Airport Surveillance Radar (ASR) upgrades and replacements;
Aircraft control tower BRITE radar display installation and upgrade;
Mode S interrogator ground system development;
Interfacility communications; and
Traffic Alert and Collision Avoidance System (TCAS).

Your support of these initiatives and pressure for an "aggressive" development program within the FAA will pay big dividends.

Mr. Chairman and members of this subcommittee, I appreciate the opportunity to provide these comments and again commend you for your interest in promoting the safety of aviation and the public in general.

Senator **Ford**. Thank you, Mr. Sheehan.

Let me briefly ask each of you a question or two, and then I will go to Senator Exon.

Mr. Bolger, one of the ATA proposals concerning delays involves having the FAA strictly enforce a policy of separating carriers according to either the five-mile nose-to-tail horizontal separation, or the 2000-foot vertical separation, as opposed to the controller practice of combining horizontal and vertical separations.

Does not your proposal impose a greater burden on the already strained air traffic control system?

Mr. **Bolger**. No, sir. I think there is more burden with what they are trying to do today than to use the standard programs that they had in effect prior to 1981. When they have to have long separations and have to keep track of them, there is more work for the controller, more things for the controller to think about than what we are proposing.

We are not proposing anything more than what they had done safely for years with a properly staffed controller work force. We also are not proposing that this be done in any area where the FAA does not think they have a properly staffed work force that can do this. But we think that in most instances they can, and they should return to where they were pre-1981.

Senator FORD. You have also proposed a return to planned airborne holding, which the Administrator said yesterday he would not allow. What is your reaction to Admiral Engen's statement?

Mr. BOLGER. First of all, they practice airborne holding every day of the week in the air traffic control system. We are not recommending that we go back to increased airborne holding. What our whole statement was about, there is more capacity, and it is proven by the record, there is more capacity at airports where they are holding planes on the ground at the origin point that could get to the destination point and land.

Now it may result occasionally in additional airborne holding, but we are not recommending airborne holding. We are recommending that they take advantage of additional runway capacity at destination points. There is a difference. It has been termed "additional airborne holding," but that is not our plan at all. We are saying, dispatch the planes, and it may on occasion cause more airborne holding, but the experience factor at that destination point says they will probably land on schedule.

Senator FORD. Well, Mr. Bolger, you have just heard from Mr. Sheehan who said that from AOPA's point of view there is currently a controller capacity problem. How can we on this subcommittee, then, reconcile this statement with your desire to basically put more planes in the air?

Mr. BOLGER. There are several points in the United States where there may not be sufficient, fully qualified controllers, but Admiral Engen has said that in most cases, and we agreed with him, they have sufficient controller staffing. Now he should not allow any changes in the programs or procedures where there are not sufficient controllers to control that traffic under the changed procedures, but we think in most cases there are; and I think Admiral Engen agrees with that.

Senator FORD. Mr. Stephen, yesterday the subcommittee heard several comments about the safety record of small airports. Commuter airlines serve more of these airports than any commercial operator. I have one in my hometown. In general, how do you view the safety of smaller airports, especially those without a control tower?

Mr. STEPHEN. You are absolutely correct in the fact that we serve a lot of smaller airports. Indeed, we serve about 600 airports in the United States, about twice as many as the major airlines do, the jet airlines.

We are very concerned over the investments that are being not made on these smaller airports. In 1981, Administrator Bond of the FAA committed to installing 127 ILSs on small airports, position approach aids, on small airports, and to date I think only two of those airports have received that equipment because the ILS program has been terminated, and the MLS program is way behind schedule.

In developing the system in the Airport Airways Development system, particularly the airways, a lot of attention is placed on the primary hub airports where rightly they should be placed. Unfortunately, the kinds of investments in terms of approach lighting and radars and position approaches are simply not being made on the small community airports. We have got to keep this sytem in balance.

It is important for the people that live in the smaller communities to have a reliable, on-time access to the air transportation system through our hub airports, and we hope this will be something that can be addressed as part of reauthorization.

Senator FORD. The Chairman of the NTSB spoke strongly yesterday about the need for upgraded flight recorders. Why is it that the Part 135 carriers, which are the commuters, are not required to have flight data and cockpit voice recorders?

Mr. STEPHEN. This equipment is not a direct safety-in-flight piece of equipment. It is not something that is going to prevent an accident, such as having like a transponder or some type of a radio navigation aid. It is a tool of accident investigation. It has been clear, and we have looked at this again in the past year very, very seriously because the Board has asked us to look at it.

A cockpit voice recorder is approximately $18,000 per airplane in cost. The FAA has got an active rulemaking on that, and we believe the FAA should go to final rule. The flight data recorder is a significantly more expensive piece of equipment. It costs upwards of $50,000 on new airplanes, and it is impossible to retrofit.

We understand the Administration is looking at rulemaking later this year on that subject, and if they proceed with rulemaking we will certainly evaluate it. It may make a lot of sense for newly manufactured airplanes to be equipped with flight data recorders so we have the kind of information on accident investigations that prevents accidents in the future.

Senator FORD. I will yield to my colleague, but just one statement. It is my responsibility to see that the Airport and Airway Improvement Act is completed on time, and I intend to do that. One of the problems I want to get back to you with in a little bit is the major airlines raiding commuter airlines of their good pilots. I do not know how you can keep them, unless you pay more. They are more aggressive about recruiting these pilots. So we will get into that a little later.

Senator Exon.

Senator EXON. Thank you, Mr. Chairman.

Mr. Stephen, you made a comment about priorities here. You were talking about the reauthorization bill, the money coming out of the trust fund. Is that what you were talking about?

Mr. STEPHEN. The reauthorization study. I know everybody is greatly concerned over the $4.5 billion that is sitting there lying idle that has been taken from the air traveling public. We have to go on with the program and get the rest of our airport airways modernization program done.

Senator EXON. You said you were surprised. I believe that was talked about yesterday. I brought the matter up. I thought it was a high priority matter, and I certainly think that when we are talking about the authorization bill, we are talking about next year's authorization bill and not now.

Do you believe there could be a significant improvement in safety now by merely moving that up on the calendar? I guess I did not quite understand about that.

Mr. STEPHEN. The safety is a long-term investment. The things we did five years ago impact safety in the system today. The fact that there were cuts in staffing, for example, in maintenance technicians, the cuts in inspectors in the FAA. We saw those as being problems, and five years ago we were saying, stop it. Increase those numbers.

So the answer is, the types of decisions that are made today are going to impact system safety over the next few years. We are very pleased at the level of authorization, or appropriation the Administration has sought in asking for a billion dollars for airport construction grants, and $1.3 billion for facilities and equipment, but at the same time that is the bare minimum necessary to maintain the safety of the existing system without adding capacity.

If we do not get at least $1.3 billion on our F&E program, we will not keep the program on the rickety pace of moving forward on airways navigation and air traffic control.

Senator EXON. I guess my question had to do with your statement that you were surprised that no one had mentioned that. I thought we talked about that a great deal during the time that I was here at the hearing yesterday, and I think it is a major priority of the Chairman, and certainly this member of the Committee. It has been for a long time. I agree with your last statement. I would say that the Administration's proposal is the minimum that I think is necessary. I am even considering the proposition of advancing a suggestion that unless we, the Congress and the Administration jointly come up with a plan to spend this money out of the Aviation Trust Fund, we should consider rescinding the Federal tax and letting the local airports take it over for purposes of making improvements there. I think that might be a mechanism to get at the problem. It is my view that there is no benefit in letting the Trust Fund accumulate and not drawing down on it for needed improvements.

Let me just ask one question, Mr. Chairman, of each of you. You were all here this morning I think and heard Senator Byrd, the Majority Leader, on his advocating speedy appointment of the experts to look over the present safety and give us expert evaluation of that. Do you agree that that is a good idea?

Mr. BOLGER. Yes, we do. ATA does. We testified in favor of the Commission, and we think it ought to get started in this work as soon as possible.

Mr. STEPHEN. Absolutely.

Senator EXON. I am glad to hear that. Do you all share that view?

Mr. SHEEHAN. Yes, sir. We had some reservations about it, but our reservations were made a part of the Safety Commission. Principally, the thought that there should be some aviation expertise on the Commission, and now that that is, we fully support the objectives of that Commission and hope it gets off the ground rapidly.

Senator EXON. Have you, as representatives of your organizations, written or communicated your wishes to the White House? If you have done that, I thank you. But if you have not done that, I would encourage you to do so, because you represent a significant portion of the industry. I think that might help us in our efforts to get the President moving on the appointment.

Have you communicated your thoughts to the White House?

Mr. STEPHEN. Yes, and to DOT, both.

Mr. BOLGER. Yes.

Mr. SHEEHAN. We have done it verbally, but not in writing, so we will take your suggestion, Senator.

Senator EXON. Thank you very much, gentlemen.

Mr. SHEEHAN. Thank you, Mr. Chairman.

Senator EXON. Thank you.

I did not get to Mr. Sheehan. I did not want you to feel slighted, so I will come back to you a little bit.

Mr. Sheehan, you stated I believe that in the last six months you have been concerned with, and I quote, "government's ability to provide basic safety-related resources." Would you please elaborate a little more on that?

Mr. SHEEHAN. Yes, sir. I would be glad to.

What I am saying there is the basic function of the air traffic control system is to provide separation between aircraft to make it safe, expeditious, and orderly flow. But in addition to that, they have some supplementary tasks that they are supposed to be performing on a workload-permitting basis, and specifically I am talking about safety alerts and advisories.

These are things that go over and above the separation function of the air traffic controller, but they are very important to inform aircraft that there might be somebody else out there. It is our contention that in the major terminal areas during the peak hours the controller has no ability to do this. This includes air space outside the highly regulated air space such as TCAs and ARSA. This might go out to as much as 100 miles away.

This is not the controller's fault, I do not think. This is just a sheer overload of his ability to work aircraft in the system, and to provide this additional service.

Senator FORD. What is your industry's position on the Secretary's announcement, I believe it was yesterday, to expedite the mandated use of Mode-C on all general aviation aircraft flying in the 23 busiest airports by December 1, 1987?

Mr. SHEEHAN. I guess our initial reaction is one of skepticism. Any time that you impose a new rule or procedure, there has got to be some concomitant benefit that comes out of it. Now how much more safety are we going to realize from the imposition of a Mode-C requirement in the group TCAs?

Well, I think right offhand you can say that there will be a very small increment, without even involving the controllers, but this comes back again to our ability—my comment concerning the ability of the FAA to come up with sufficient resources, be it radar, radar computers, or sufficient number of trained controllers to adequately absorb that additional amount of information and put it to good use.

So I guess we are in a wait-and-see mode, and before this is instituted we are asking the FAA to do a site-by-site analysis of each one of these 14 locations——

Senator FORD. I was getting ready to have a follow-up question until you just answered it. Go ahead.

Mr. SHEEHAN. We think that is very important if we are going to realize any degree of increased safety from this new rule.

Senator FORD. In your statement, you urge the FAA to improve the training system of controllers. What steps would you recommend to accomplish this? You might include in that answer a discussion of where is the FAA currently falling short.

Mr. SHEEHAN. Well, I think it is an overall attitude more than anything. We heard yesterday that there is excess capacity in the ability of Oklahoma City to train controllers. Why do we not turn some of that excess capacity into giving us a higher degree of, let us say, intensiveness in the training process, and being a bit more creative in getting people out to the field?

It is once a controller gets into the field that his real training starts, that he works actual airplanes. There are ways to enhance and speed up that training. The example we used in our testimony is in Seattle. The Seattle Center has a very innovative system using actual traces from live targets that have been recorded to provide to their new controllers.

I do not have all the details of this. We have talked to the FAA about it, and they are considering installing this system nationwide to accelerate that process. But I come back to the thought that there must be an attitude, a sense of urgency, that we need to see in the FAA to increase this process, to accelerate controller training.

Now we do not advocate this happening at the cost of safety or rushing people through and putting them in a fully qualified position before they are really ready, but there are ways to get them there faster.

Senator FORD. I am getting ready to quit here. I have gone through two.

Mr. Stephen, I have to ask this question. We have heard a lot from the Majority Leader this morning about so many flights leaving one airport in a short period of time, I got a real shock not too long ago when I flew from Washington to the city where there was a hub to pick up a commuter to fly into either Louisville or Lexington.

When I came down the escalator and I turned left to look at the counter, there were five separate flights up there leaving at the same time. I have taken that flight more than once, and my prayer is that our flight will get called first instead of fifth, because if we are called fifth, we are 40 minutes late arriving at our destination.

This commuter is associated or a subsidiary of a major airline. But can you explain to me why all of them are going to leave at the same time? It is like a fellow said one time, a man jumped on a horse and rode off in ten different directions. It is just awful hard to do.

Mr. STEPHEN. I cannot explain that particular circumstance, but I will say that our industry has changed dramatically in the last 2 years, 3 years, in that where we had an independent identity as an industry calling our shots in terms of flight scheduling and times, that has changed because of co-chairing, of affiliations with major airlines. It becomes very important that the flights that come in from the smaller communities and go into these hub airports, that there is a delicate timing so that the passengers can get off our flight and onto its major airline partner flight, or vice versa.

If those flights do not happen in a consistently and successful on-time way, passengers will drive rather than fly. So delay is a very, very serious problem to us, and as I say I cannot comment on exactly why five airplanes would be scheduled at the same time, other than it is a serious problem and of course the Secretary this week issued a show-cause order which we will evaluate along with the Air Transport Association.

Senator FORD. Senator Danforth, do you have any questions of this group?

Senator DANFORTH. Mr. Chairman, just one, for anyone who cares to answer it; or just maybe a brief answer from all the witnesses.

Gentlemen, do you think that air transportation is less safe as a result of deregulation?

Mr. BOLGER. No, sir.

Mr. STEPHEN. Absolutely not.

Mr. SHEEHAN. No, sir.

Senator DANFORTH. Thank you.

Senator FORD. Boy, that was good. You are doing better now than when you were Chairman.

Senator FORD. Senator Kassebaum was unavoidably detained this morning. She has several questions that she would like to submit to you gentlemen in writing, and asks that you respond to those expeditiously, if you could.

Mr. BOLGER. We would be delighted to.

Senator FORD. So we thank you all for your testimony this morning. It was very valuable, and we look forward to working with you in the future, particularly for reauthorization.

Mr. SHEEHAN. Thank you.

Mr. STEPHEN. Thank you.

Senator FORD. The next witness will be Mr. O'Brien, Director of Safety and Engineering of the Airline Pilots Association here in Washington.

Good morning. As we have done in the others, if you want to highlight yours, your total statement will be included in the record as if given, and you may do whichever you please. You may proceed.

STATEMENT OF JOHN O'BRIEN, DIRECTOR OF ENGINEERING AND AIR SAFETY, AIR LINE PILOTS ASSOCIATION

Mr. O'BRIEN. Thank you, Mr. Chairman. I will highlight our testimony which has been submitted for the record. To do that, I will address the six issues that you highlighted in the invitation to appear before the Committee.

Mr. Chairman, as indicated I am John O'Brien, the Director of Engineering and Air Safety for the Air Line Pilots Association. I appear before you today representing the interests of 39,000 professional airline pilots who fly for 47 airlines.

The first issue that you suggested we address is the staffing needs and experience levels of the current air traffic controller work force.

First of all, we feel we need more controllers. As you heard yesterday, the FAA feels that they are addressing the problem of staffing, and they are hiring more controllers, but in spite of this there are air traffic control facilities today around this country that are indeed understaffed.

To complicate this situation further, the key element in a successful air traffic control system is full performance level controllers, or in other words, the experience level of the work force. Since the strike in 1981, the FAA has redefined what a "full performance level controller" is. So even though we have close to 9,000 full performance level controllers, that is not the same as having an equal number of full performance level controllers prior to the strike.

Again, that is terminology and numbers. The key issue that our pilots are concerned about is experience levels. We conducted a survey of our membership in June and July last summer. That survey involved 114 questions with four or five parts each, and spaces for written comments. We figure that if we get 3,000 or 4,000 replies we would be doing well.

We got over 10,000 replies to that survey. The key item that concerned these pilots was the air traffic control system and the risk of a mid-air collision. Remember this was in June and July. This was before Cerritos, before Salt Lake City. We figured that maybe windshear might be the key issue because of the Dallas accident, and accidents that had occurred before that. So we were a little surprised with the results.

But upon reflection, the concerns of the pilots are really adequately reflected in the FAA's own data of near-misses. As Senator Byrd indicated earlier, those reports are going up and, in spite of the fact that the FAA termed them as "nonevents," they are indeed occurring, they are incidents, they are indicators.

This does not mean that the system is unsafe. The system is safe, or else we would not be flying in it and carrying people with us. But this trend information that we are getting, which is being analyzed by the FAA, does point out a need to do something. And it is tied in with the overall workforce and experience levels, and the amount of traffic flying in the system.

Which brings us to the next issue that you asked us to address. That is, the safety implications of the recent airline proposals for eliminating delays. Even though we just heard that the ATA is not proposing additional holding, obviously additional in-air holding could result from imposition of some of their recommendations. We are opposed to any change that would involve additional in-flight holding. This position is developed based upon comments that we are receiving on a daily basis from our people who are flying in the system.

There are facilities around the country that are adequately staffed, and maybe you could allow some selective additional inflight holding, but there are just as many that are not adequately staffed and we should not under any circumstances impose the additional workload on those people who are required to separate traffic. We are just not ready for that yet.

We could look at the flow control and metering spacing procedures that FAA is currently employing, and maybe tighten them up a little bit and gain a little capacity in some places. We would be in favor of that.

The next issue you asked us to look at was the need for TCAS, or traffic alert and collision avoidance systems aboard all commercial aircraft. We think that such equipment should be mandated just as soon as practical based upon an adequate development and testing program.

As everybody knows, the FAA has indicated that a rulemaking action is forthcoming concerning TCAS-II or some version of TCAS-II. As you also probably know, we are not in favor of that particular system. We favor TCAS-III, because TCAS-II does not work, in our opinion. You have also heard some people, the Chairman of NTSB and the FAA Administrator, indicate that because of our position we are holding up the whole program.

Well, if TCAS-II had been developed as originally envisioned by Administrator Helms, it would be installed on all airplanes today. One of the key elements of that installation program is operational evaluation and real airline flying. The FAA has been working with one airline for two-and-a-half years now trying to do that for TCAS-II, and because of developmental problems with that equipment, they still are not ready to do it.

In the meantime, the development program for TCAS-III has been proceeding and has not encountered any developmental problems. In fact, the flight test results are very encouraging. I could go on and on with many operational reasons why we would prefer TCAS-III over TCAS-II, but I think the key element is that if we are going to have TCAS-II it is going to have to be fixed before we can install it, and that is going to take time.

So there is no question of delay in waiting for TCAS-III because TCAS-III can be developed and implemented in the same amount of time it would take to fix TCAS-II and implement it.

The next issue you asked us to identify is the FAA's proposals on terminal control areas. Basically there were 39 recommendations made by FAA following the Cerritos mid-air collision. We support all of those recommendations. They are recommendations similar to those that were made by industry. All segments of industry made similar recommendations to FAA back in 1982 as part of the National Aerospace Review Program.

We commend the decision of the Secretary as announced yesterday to move all the terminal control areas, TCA's group two's into group one's and require Mode C, but that is just one of 39 recommendations that the FAA is actively involved in. So it is a step in the right direction, but we have got a long way to go.

The next issue we were asked to look at were the safety effects of deregulation. It is interesting that in the survey of airline pilots that we talked about earlier, we asked the question, do they feel that there has been a negative impact on safety as a result of airline deregulation? I know it is a subjective question, but it was interesting. 43 percent of those 10,000 responses we got back said there had been a "great" negative impact as a result of deregulation. An additional 53 percent said that deregulation had affected safety to some extent in a negative fashion. So 96 percent of those pilots who responded feel that deregulation has had a negative impact on safety.

There were other questions to try to put some substance to that subjective response. We asked, how had safety been effected? The primary response was maintenance. Secondarily was the impact on the air traffic control system by increased demand.

The last issue you asked us to look at was funding shortfalls in regard to the National Aerospace System Plan. I am sure that everyone remembers that this question is asked of FAA every time they appear before a Congressional Committee, and the answer is always that funding is not a problem. There are technical development problems, there are administrative problems, but it is not a funding problem.

We feel that funding is a problem. Back in 1981 when we reauthorized the trust fund and identified funding levels that were needed to modernize the air traffic control system, specific dollar amounts were identified for each of those five years. Not one of those years did we reach those amounts. That has to have had some impact on the ability of the FAA to meet the program goals identified in the original proposal put out by Administrator Helms.

Basically that concludes my statement. I am ready to answer any questions you may have.

Senator FORD. Thank you.

Clear me up on one thing on TCAS–II and TCAS–III. Do we have to have TCAS–II in order to operate TCAS–III? Is it better to have TCAS–II and then move on to TCAS–III? I have had some indication that we should have TCAS–II before we go to TCAS–III. There may be those who think we ought to go on with the TCAS–III system. Your testimony today indicates that we could move right around TCAS–II and go to TCAS–III, which in your estimation has been moving on very rapidly.

Mr. O'BRIEN. The original TCAS development program that FAA has put together, proposed to develop TCAS–III concurrently with TCAS–II. The TCAS–III development has gone on independently with separate contractors from the TCAS–II development, and therefore we feel it is not necessary to have TCAS–II first. In fact, if you look at the recent findings of the technical experts who are working on the development standards for both TCAS–II and TCAS–III, those people feel that in order to have an acceptable TCAS–II system it will have to be modified in order to work properly. Those modifications to the TCAS–II recommended by the experts will indeed basically give you a TCAS–III piece of hardware, because it is basically antenna accuracy problems that we are dealing with.

So the changes to TCAS–II that are recommended by the experts in order to overcome the problems that have been encountered in development provide you the ability to go right into a TCAS–III anyway.

Senator FORD. One thing that was interesting to me in your survey of your membership is that they put maintenance above controllers. You indicated that it was closely behind controllers. What about the maintenance? Should it be improved in order to enhance safety? Then we look at controllers. We have been hearing more about controllers—at least yesterday and in the past from correspondence, more so than we have the maintenance point.

Mr. O'BRIEN. Well, just to clear up any misunderstanding that might exist, the maintenance question was with respect to the impacts of deregulation. The primary concern brought out by the survey was the risk of a mid-air collision and concerns about the air traffic control system.

In the section of the questionnaire dealing with deregulation, the number one cause for concern as a result of deregulation was maintenance. The number two concern with respect to the impact of deregulation was the crowding or demand for capacity that was placed on the air traffic control system.

With respect to the maintenance, the most common complaint was the increased number of inoperable items on the aircraft. There is a concept called the "Minimum Equipment List" concept.

Senator DANFORTH. Called what?

Mr. O'BRIEN. The Minimum Equipment List concept. This allows an airplane to be operated with certain components inoperative, and operated safely.

Senator FORD. If your coffee maker does not work, you can fly.

Mr. O'BRIEN. Right. However, we, or the pilots that we represent, are finding more and more items on that list, and some of those items are much more serious than a coffee maker. It may be a generator; it may be a hydraulic pump; it could be a number of different things.

One of the problems——

Senator FORD. Are these approved by FAA?

Mr. O'BRIEN. They are, or else you could not operate the airplane.

One of the reasons for this increased number of items on this list is the inability of the airlines, because of hub and spoke scheduling systems, to devote as much time during quick turnarounds to fix items, or else you are going to delay these connections that were referred to earlier by the first panel, RAA and ATA. If you put a maintenance fix in there, someone is going to miss that connection and you are going to mess up the whole hub and spoke system.

So you can dispatch that airplane with that item inoperative, with the intention of fixing it when you have a longer layover, maybe at night when the hub and spoke system is not operating as fiercely as it is during the daytime. However, with all of these airplanes with these deferred maintenance items coming into this one location at night, you do not have enough mechanics, you do not have enough spare parts, you do not have enough to do all this work necessary in the given amount of time, so the item gets deferred, and deferred, and deferred, and the list gets longer, and longer, and longer, until finally someone just feels that things are not right, and then you have a clash of personalities between the particular operator and dispatch, maybe, or some supervisory personnel.

All of those things individually are not a cause for concern for safety, but taken in total at some point in time it does reach the point where someone has to make a decision to take that airplane out of service and fix it, because the list has just gotten too long.

Senator FORD. Are we getting into the situation I mentioned a while ago where too many flights are taking off in too short a period of time where, for example as Senator Byrd said, you have got 40 flights trying to get out in an hour, with 37 flights trying to come in? For instance, during the day between 4:00 and 6:00, everybody is trying to get in and out, and between 1:00 and 4:00 there are no flights? Can we spread that out and give you a better maintenance program with less cost to the aircraft owners, or the company?

Mr. O'BRIEN. There is another action just recently announced, as well, involving the antitrust provisions where the airlines can get together and look at scheduling. That would help, if you could reach some kind of arrangements as the airlines did voluntarily a couple of years ago with regard to hub and spoke scheduling.

Senator FORD. In 1984, I think.

Mr. O'BRIEN. Right. I think that is one of the areas——

Senator FORD. It did not last very long. It lasted less than two years.

Mr. O'BRIEN. Competitive forces have a tendency to work their way, but I think that is one possible way of alleviating that problem. Another way is the FAA's high-density rule. There is a rule on the books today at Washington National, Chicago, and a couple of the New York airports that classifies these airports as high density airports. Airlines can only schedule IFR flight plans in the FAA computer. You can only schedule sixty an hour. So even if the airline, or the airlines and the commuters serving those airlines, attempted to schedule, as far as the public was concerned, five flights at the same time, the FAA computer would not accept that if it was a high density airport and there were only 60 slots available per hour.

From a practical matter, even though they were scheduled, they would not be departing at that time. Now that might be considered a disservice to the public. That is something that is going to have to be worked out by other people, I imagine.

Senator FORD. Well, it might be considered a disservice, but if they live from destination to destination, that is a major consideration, in my opinion.

Senator Exon.

Senator EXON. Thank you, Mr. Chairman.

You have stated here this morning that TCAS–III could be brought to full operational status just as fast as the planned procedure of the FAA to go to TCAS–II, and then later into TCAS–III. If your information is correct on that, what would be the reason that the FAA is holding fast to their TCAS–II system first?

Mr. O'BRIEN. I think the FAA's position on that will change.

Senator EXON. Will change?

Mr. O'BRIEN. Yes.

Senator EXON. It did not yesterday.

Mr. O'BRIEN. It did not yesterday, but there was a slight change, because the Administrator did actually mention TCAS–III. He mentioned a program to actually look at operational evaluation of TCAS–III, which in the past he has been reluctant to even speak to publicly.

In the last appropriations cycle, both the House and the Senate directed the FAA to look at its TCAS program and change the contracts with its vendors so that, or modify the contracts with its vendors so that TCAS-III hardware could be developed, tested, and implemented. The FAA is in the process of developing a response, which was supposed to have been back by January 1. I understand that response is over in DOT now being coordinated, and our understanding is that response will indicate that the FAA will conduct an operational evaluation of TCAS-III, carry it through certification, and make it available.

Senator FORD. Senator, may I correct him just a minute on being "coordinated"? It is another word we use up here. That statement has probably been sanitized.

Mr. O'BRIEN. Whatever.

Senator EXON. I have had a feeling that the bureaucracy in the FAA, in spite of the awful lot of talent tends to slow things down in this safety area of onboard air collision avoidance, rather than speeding it up. Is that feeling shared by the pilot's group?

Mr. O'BRIEN. Sometimes we are very frustrated in our attempts to attain what we consider speedy action out of the FAA, but in many of those cases we have been able to come to Congressional committees and get directives and funds, where necessary, to get speedy action.

There are a lot of activities that are going on now. We tend to dwell on the negatives in many of these question and answer sessions. We could sit here all day and I could list for you probably a hundred activities that are going on now within the FAA and NASA that are very positive as far as safety is concerned.

The whole national runway friction measurement program dealing with icy and contaminated runways, which is pertinent to weather conditions that eixst around here today, that program started four years ago, in spite of the reluctance of the FAA and some airport operators and airlines, because we went to Congress and Congress directed the FAA to do this and got some money. That program has produced grooved runways at all the airports we operate into now, and friction measurement devices as well. I just offer that as an example of some of the things that are positive, that are going on, and we are very encouraged sometimes by those kinds of things.

Where we really tend to run into delay and frustration is when there is a significant amount of money involved with actually implementing something, like TCAS. If the FAA was to come out and mandate this system tomorrow and TCAS-III was available, and pick a number, it may cost $50,000 per copy, it may cost more, it may cost less if there is a large market created by mandating it.

There is reluctance to mandate equipment unless we can assure ourselves that there is going to be a return for that investment, unless we can assure ourselves the equipment that is going to be mandated is indeed going to satisfy the need, is indeed going to work. I can give you examples where we have rushed pell mell into equipment, mandating equiment, like ground proximity warning systems. Following the TWA accident here at Dulles Airport back in 1974, equipment was rushed through development, mandated, and installed, and as a result it did not receive the trust of the pilots that were using that equipment. It got so bad that equipment was actually turned off when it warned pilots of potential problems, and by turning equipment off an airplane was actually flown into the water. This happened because crews mistrusted it because so many nuisance warnings or false warnings came as a result of implementing that equipment before it was ready.

That is one of the things that concerns us about TCAS–II. Tests to date have shown that there is an awful lot of false warnings, nuisance warnings. We cannot have that in an emergency only system. It is just unacceptable.

Senator EXON. Going back ten years or so ago, you are familiar with, I am sure, the forerunner of TCAS was the ACAS system. What was the pilot position on the ACAS system when it first came up? Or have you ever endorsed that proposition?

Mr. O'BRIEN. We were opposed to ACAS for several operational reasons. It was a vertical only system which is the same as TCAS II. We have several operational scenarios I could explain to you where a vertical maneuver is just not the best thing to do. You have got to have the opportunity to turn left and right as well as climb and dive.

Also, the ACAS required a dedicated piece of equipment on every airplane, Because of that concern we felt that the first airplane to be protected or the first airplane to have a piece of equipment installed would be protected from no one else. Therefore it was recommended that we develop a collision avoidance system that made use of equipment that was already in use on the ground and in the air. That caused the FAA to move from ACAS to BCAS. Because of technical problems with BCAS we moved from BCAS to TCAS.

We think that finally we have the technical problems solved. We have a system accurate enough in TCAS–III to avoid the nuisance warning problem and to work well in all traffic conditions. That is why we are pushing very strongly now for TCAS–III. The Airline Pilots Association never, in the long development program of collision avoidance systems since the early sixties, has ever come out and stated, that we endlose a particular type of equipment, because it was not until TCAS–III was developed that we had a piece of equipment that met our operational requirements.

Senator EXON. I would simply say that I think this is a high priority matter Captain, when I look back and consider whether the original ACAS system was good or bad or indifferent, it was a significant step, the first step on our descending ladder of coming to grips with this problem. Ten or eleven years have gone by, and we are still somewhat in limbo, although maybe making some progress.

I guess when I look over at my responsibilities on the Armed Services Committee, especially on our Strategic Subcommittee, and see that the administration is talking about developing and deploying something in the next five years as complicated as a partial umbrella or shield in the United States, it would seem to me that the development of ACAS–III or something like it is so much simpler. I am convinced that we just have not put our minds to it in the last several years.

Do you agree with my concerns about the slowness of the development?

Mr. O'Brien. Yes, sir, it is a matter of priorities and commitment. In the past we have heard tesimony over and over again that midair collisions are not the greatest safety risk. There just have not been that many midairs to warrant a relatively high priority CAS development activity. We feel that some of the statements that Senator Byrd made earlier this morning accurately reflect the situation as it is. We have trend information now that could lead us to establish a high priority for this activity and develop a system before we have the fatalities that will make us establish a high priority.

Senator Exon. My last question, Captain, and you were not requested to respond to this, but I think it is timely, and I am going to ask the question. If you do not feel that you are prepared to answer it, I would understand.

What is, if you can say it, the opinion of the Pilots Assocation with regard to mandatory random testing for abuse of drugs or alcohol?

Mr. O'Brien. Yesterday I think that our position was misquoted. I think Admiral Engen indicated that we were opposed to the drug program that was announced by the Secretary and just opposed to drug testing in general, and with the indulgence of the Chairman I would like to read just one short paragraph here that I think adequately reflects our position, and basically it goes something like this.

> Although the pilots' union has rejected random testing, it does see the need for testing under four specific circumstances: preemployment screening, after an accident, when there is probable cause to suspect an individual, and during a rehabilitation monitoring program.
>
> Testing has a place in an antidrug program. However, random testing with commonly used screening tests produces too many false positive readings which can ruin the lives and careers of innocent pilots. Furthermore, we should not fool ourselves into thinking that testing random or otherwise, is all we need to do.
>
> We have to recognize that drug dependence like alcoholism is a disease. It must be treated like a disease. The old punitive approach to alcoholism only made the alcoholic much more clever at hiding his habit. The same is true of drugs.

The Airline Pilots Association has had a very successful HIMS program directed towards identifying and helping people with the disease of alcoholism. We want to take that program and apply it to the drug problem. So the only disagreement we have is with the random nature of the testing because of abuses we can see coming out of random testing.

We want a drug-free cockpit. We will not stand for an individual in that cockpit who is impaired through alcohol, through drugs, whatever, especially when you get into the position that we find ourselves today, flying more and more two-crew cockpits and very busy traffic situations. Those people are busy. You need both people at their highest capability in order to conduct operations safely.

That concern was what caused us to attack the alcohol problem. We have people trained to identify problems not only in the cockpit but in social contact, in the homes, and in all areas, and we have people trained to work with that individual, to identify the individual, and to take the individual off of flying status and work cooperatively with the airline managements that are involved and the FAA.

In fact, this program was federally funded up until a year or so ago.

Senator **Exon**. I thank you. My time is up. I just want to say I am delighted that you clarified that, because we have been hearing something to the contrary. I really feel with the attitude you have expressed here we can come to some kind of an agreement and move forward on this thing that is of concern to all of us. I would like to say an old expression that I have heard very often. That is that the pilot and the flight crew are usually the first ones to have seen an aircraft accident or collision. I think you are being very forthright about that fact and we look forward to working with you in these areas.

Thank you.

Mr. **O'Brien**. Thank you.

Senator **Ford**. Senator Danforth.

Senator **Danforth**. With respect to the concern of pilots about equipment maintenance you raised in your testimony earlier, when you said that pilots sometimes fly without having the defect corrected immediately because of time pressure, just to clarify that question, you were not referring to safety-related equipment were you?

Mr. **O'Brien**. That is right. There is no piece of equipment that by itself can be considered a safety concern. What concerns us is that if you have a hydraulic pump out and that hydraulic pump might affect the nose wheel steering on a particular airplane or affect the ability to use the thrust reversers when you are going to dispatch the airplane into Washington National in a snowstorm, with slush on the runway and icy conditions. Under the minimum equipment list you can do that.

Senator **Danforth**. Does the pilot have absolute authority to determine that a plane is not safe to fly?

Mr. **O'Brien**. He does not have absolute authority. He has absolute responsibility to determine whether or not that plane is safe to fly. What we are trying to avoid is the development of situations were pressures are brought both on the operator to meet schedules and connections and the pilot to assist the operator in doing that in these very competitive times brought about by deregulation, with many failing carriers, many carriers in tough financial straits. It is up to the individuals, both management, pilots, mechanics, and everybody involved with that operation——

Senator **Danforth**. Cannot a pilot say for whatever reason that this plane is not safe to fly and it will not be flown?

Mr. **O'Brien**. Yes, Senator, he can do that. I would refer you to a circumstance that occurred in Atlanta that was written up in the paper where not only the pilot decided the airplane was not safe to fly, he decided he was just going to walk off the airplane and give it up.

Senator **Danforth**. That was the Eastern pilot?

Mr. **O'Brien**: That is correct.

Senator **Danforth**. That was an amazing story. Have you talked to that fellow?

Mr. **O'Brien**. Yes, I have talked to the captain and the first officer involved. I do not want to digress too much here, but let me give you a little bit of background on that particular incident. The airplane was operating into Atlanta. There were thunderstorms in the area. There were delays getting into Atlanta. The airplane landed. It was behind schedule. There was great pressure to get the airplane back out again. The crew wanted additional fuel because there were more thunderstorms between Atlanta and where they were going in Florida.

There were extended discussions between the operator and the pilot as to how much fuel they were going to put on that airplane. Arguments ensued. The captain insisted and won and got additional fuel but the plane was delayed. He got on the airplane, ready to push back, and they were briefed that because of traffic conditions, taxiing was to be conducted in a certain direction—this particular operator uses a powerback operation at Atlanta. That is where you start the engines, put them in reverse, and actually back away from the gate rather than being pushed away from the gate. To do this properly you are disconnected from the ground crew. There is no hard line connection, so you brief ahead of time on what you are going to do.

Traffic conditions changed between the time they disconnected. On the radio they were told to taxi in the opposite direction. So the ground crew had been briefed in one direction. The tower said the other direction. So they had no choice but to stop the airplane, lower the stairs, and get out and talk to the ground crew again.

This further delayed things. In the meantime there was a problem of shutting a service door, a galley service door. They kept getting a warning light in the cockpit that the door was not shut and sealed properly. You cannot dispatch an airplane in that condition. So they tried shutting it a couple of times and the light would not go off, so the captain said, we are not moving until that light is fixed or the door is fixed.

The first officer went back and found that because of dirt and corrosion problems on the latching mechanism it was not latching properly. With a pocketknife it was cleaned out. The door was shut and it latched properly and the light went out.

Finally they did back away from the gate, now considerably late, and got in line. They were number eight just to get off the ramp and about 30 in line out by the runway. By the time they got to the end of the ramp area trying to get in the next line for the runway, the next queue of 30 airplanes or so, they were more than an hour behind schedule. It was a short duration flight, about a 40-minute flight.

There were many people on board that flight that were business people who were going to meetings that were—the meetings were scheduled in such a manner that this flight being an hour late was almost going to make it not necessary for them to travel, so certain crew people decided they wanted to get off this flight.

This particular airline has a policy that if the airplane has not left the ramp, and it had not yet, it had not gotten out by the runway, if a person wants to get off they go back, so they turned around and went back. By this time the captain had had enough, and he said, that is it.

Senator **Danforth**. Short of reregulation, and I think the chances of going back to the old regulated system are really very, very small, short of doing that, do you have any suggestions as to how to relieve this situation both with respect to equipment failure and to people getting to the end of their rope?

Mr. O'**Brien**. No short-term recommendations or solutions. We have looked at the deregulation problem and the problems in the industry today, and the nonsafety problems, and capacity problems, which are somewhat related to safety, and the common denominator to all those problems is resources. I do not just mean dollars. I mean equipment, personnel, experience levels. So if we improve that system without reregulating, and I am not saying we should reregulate, we will have to provide the FAA with the resources necessary to provide a safe and efficient transportation system, and some people question both the efficiency and the safety of today's system.

It is a long-term solution, and we have to make sure that the FAA has the personnel to look over the shoulder of all these new operators we have. A lot of new people coming into the industry today. And the experience levels of the pilots, mechanics, airline management suffer the same as the experience levels of the air traffic controllers. You have a situation where some very well-intentioned decisions are made. No one is trying to violate rules. No one is trying to operate unsafely. But experience is lacking and decisions are made that are not in the best interest of the traveling public, and the FAA is not there, not able to catch those decisions, because they just do not have the personnel to do it.

Senator **Danforth**. I just want to make one comment to you on mandatory drug testing. As you know, or maybe you do not know, I have a different position from yours. You have given four circumstances. As I recall, they were pre-employment, after an accident——

Mr. O'**Brien**. Probable cause.

Senator **Danforth** [continuing].—Probable cause, and——

Mr. O'**Brien**. Rehabilitation.

Senator **Danforth** [continuing].—Persons on a program. I am told that with respect to people operating the Conrail locomotives at the time of the Amtrak wreck, that immediately before they took the train out they had to go back to their supervisor and get some equipment, and that they spent about 15 minutes roughly—I do not know if this is totally accurate; this is what I was told—with their supervisor, and the supervisor, who had had apparently some training in identifying drug problems, had no idea.

So, what I am suggesting is that the probable cause reason—I mean, that is certainly a good reason to test, if you think that there is probable cause, but my own very strong suspicion is that without random mandatory testing there is no effective drug testing program, and I understand your concerns, but my hope would be that we could work together to put together a meaningful drug testing program, which would have to include random mandatory testing.

It is possible that you could select by computer who the people tested are and when, rather than have any concern about people being singled out unfairly. But I would really hope that your association could maybe look with a little more favor on the possibility of random mandatory testing.

Mr. O'Brien. Maybe you would not agree with me, but I think, Senator Danforth, that our positions are not all that far apart. If you look at the total drug program, random testing, in our opinion, is a very small part of the total program. There are a lot of different types of testing processes. As I said earlier, drug testing is not the key element in the program.

Senator Danforth. I do not disagree that there are a lot of elements in the program. I just think that random mandatory testing is the sine qua non; but for that nail, the war is lost in my opinion.

Mr. O'Brien. I guess on that point we would have to disagree with you, but I think that we will work with you. Maybe we will convince you, and maybe you will convince us, but we are going to work on it.

Senator Danforth. Thank you.

Senator Ford. Let me just follow up a little bit on Senator Danforth, and then I will quit. We are moving along a little slow this morning.

Is one of your objections that you do not have a foolproof testing situation?

Mr. O'Brien. That is one of the objections to random testing.

Senator Ford. I would not mind random testing myself if I could be assured that an aspirin I took this morning would not reflect in there and all of a sudden your charter is jerked and you are covered with a cloud that this fellow has problems and, therefore, you are running in for an additional test. You come out clean, but the rumors already have hit 40,000 other people. Everytime an airplane comes in, they take poor old Joe downtown for additional testing.

That bothers me some. I know you are smiling, Senator.

Senator Danforth. I think I can assure you that the aspirin would not be the reason for a positive result.

Senator Ford. Mr. O'Brien, thank you.

Senator Exon. I have one comment to make.

Senator Ford. How about a question?

Senator Exon. It is a comment.

Senator Ford. Comments are longer.

Senator Exon. But comments sometimes are more informative to the general public than questions.

There will be a hearing in the Surface Transportation Subcommittee on February 17, followed by a full Commerce Committee hearing on the matter of drug testing as far as railroads are concerned, and I think that very likely might set the pattern for the bill that will eventually come out of the surface transportation subcommittee, which I chair.

I want to say this morning that I think it is critically important that we delve into this thing in considerable detail through committee hearings. An initial hearing will begin on February 17 followed by a rather important meeting of the full Commerce Committee on February 20. There are a rash of bills coming forth on this topic, many of which I agree with and many of which I do not. The pronouncement by the Secretary of Transportation to mandate testing may in my opinion, be somewhat premature.

I happen to think maybe we should try to cooperate and coordinate everybody that has anything whatsoever to do with public transportation. Not only airline pilots but also engineers on locomotives. What about bus drivers? What about truck drivers? All of these things, I think, should be handled on basically the same fair general basis; therefore, we look forward to all of the input that we will have at those hearing. We will certainly be willing to listen to what you people in your organization think of that, Captain.

Thank you very much.

Mr. O'Brien. Thank you, Senator.

[The statement follows:]

STATEMENT OF AIR LINE PILOTS ASSOCIATION

I am Captain Henry A. Duffy, president of the Air Line Pilots Association. My association represents over 39,000 pilots who fly for 47 airlines. I sincerely appreciate the opportunity to appear before you today and express the association's views on aviation safety. In particular, our statement deals with with the experience levels of the current air traffic controller work force, system delays, collision avoidance, Terminal Control Area proposals by the FAA, the effects of deregulation, and the funding shortfalls of the National Airspace System Plan.

You may be aware, Mr. Chairman, that ALPA continuously monitors the ATC system. In addition to the special monitoring that we conducted during the PATCO strike, we have also reviewed the professional studies on the air traffic control system conducted by the Government Accounting Office, the National Transportation Safety Board, The jones Committee, and the Flight Safety Foundation during the past few years. All data collected and reports reviewed clearly indicate and conclude that there are significant problems within the system, that the margin of safety has diminished, and that there is still a shortage of experienced controllers today, almost six years after the PATCO strike.

We agree with these conclusions. Based on the observations and experience of our members, we have been convinced for some time that the system is not as "healthy" as the FAA would like us to believe. Many ATC facilities, particularly the ARTC centers, have not recovered from the effects of the strike in terms of controller staffing requirements. And all ATC facilities are coping with an enormous growth of traffic with a controller work force that has an overall lower experience level.

For example, it is our understanding that the controller staffing level prior to the strike included over 13,000 full performance level (FPL) controllers. (A full performance level controller is on who is fully qualified to operate all positions in a defined area.) As of June 1986, the number of FPL controllers was only slightly over 9,000. While the FAA claims their hiring figures indicate the addition of a much greater number of controllers, the real indication of the success of the rebuilding process is the number of full performance level controllers and their availability at the busiest ATC facilities. Furthermore, being classified as an FPL controller does not necessarily mean that the controller in experienced. It takes years of exposure to combinations of dense traffic conditions, bad weather, and the need to cope with equipment failures to provide and individual with the ability to make good decisions under very trying conditions. The point is that today we have fewer FPL controllers to handle more aircraft, and those FPL controllers on an average are less experienced than those we had prior to the PATCO strike.

We believe that the controller work force can be reinforced in a shorter period of time and at less cost by rehiring some of the fired controllers, particularly those who had already reached the full performance level before the strike. They would be able to requalify after only a short period of refresher training at the facility to which they would be assigned.

Deregulation has fostered an unprecedented demand for air traffic services. The increasing pressure on both pilots and controllers to expedite traffic movement causes us to believe that the ATC system is being stretched beyond its limit, resulting in the creation of very marginal situations. We are not saying that individual pilots or controllers are at fault. We are saying that increased pressures are caused by additional aircraft and by the scheduling problems brought about by the hub-and-spoke system.

We realize that the suggestion of rehiring some of the fired air traffic controllers raises a sensitive issue within the Administration. The FAA is particularly adamant about its decision not to rehire them, citing the view that rehiring any of the "strikers" would be disruptive to the current work force. We do not agree with such a rationale. The FAA has, in fact, been compelled to reinstate many striking controllers and has rehired some 700 from that group. To our knowledge, this has not resulted in any obvious disruptions or serious morale problems. The inescapable fact is that the system needs the experience these people have and it needs it now!

The airlines have recently made some proposals to eliminate delays. We are aware of these initiatives and would like to give you our thoughts on those with which we are familiar. We know that the delay situation is indeed a critical issue. I assure you there is not a pilot flying in the system who has not been frustrated by both the number and duration of delays endured. When an Eastern Air Lines Captain walked out of his cockpit in Atlanta last summer and opted for early retirement rather than face any more delays, he dramatically epitomized the true feelings of many of his colleagues. However, the issue of delays is a very complex one. Each airport has a theoretical number of aircraft that can depart and land each hour without wasting capacity. However, this number cannot be achieved consistently because of factors such as severe weather, safety considerations, human judgments by both pilots and controllers, aircraft mechanical problems, a physical shortage of gates, and other such constraints. A precise operation is impossible and thus delays occur.

There are, no doubt, some things that can be done to mitigate the delay problem, but the real issue is the lack of airport capacity. Since deregulation, the volume of commercial air traffic has increased by over 50%, while the number of airlines has increased 164%. During this time there has been virtually no attendant increase in available concrete in terminal areas. Coupled with this deficiency is the ever-present opposition by local residents to additional airport expansion and noise pollution which makes the resolution of this problem even more difficult.

In attempts to remedy this dilemma we must guard against "quick fixes" that could affect safety. Unfortunately, we believe that some of the airline proposals fall into this category. For instance, simultaneous operations on intersecting runways, which are questionable at best, are currently allowed only on dry runways. We understand the ATA has proposed such operations be permitted on contaminated runways. We object to such a concept simply because we do not believe it can consistently be done safely. Let me tell you why.

First, the procedure of simultaneous operations is frequently intimidating to pilots. If a pilot of an arriving aircraft is told to land on one runway and hold short of another, he is frequently not sure he can do so, since computed aircraft stopping distances are not provided to pilots. When a pilot advises a controller he may not be able to stop, he is frequently advised to go around and be sequenced at the end of the traffic. Not wanting to find himself in that position again, he may choose to land. This problem of intimidation has more impact on inexperienced pilots operating at busy airports. However, to require anyone to conduct such a procedure on a contaminated runway is to invite disaster. I need only remind you of the Flying Tiger accident at Norfolk, Virginia, and the recent Piedmont accident at Charlotte, North Carolina, both of which involved operating on wet runways. This is a dangerous proposal and we hope the FAA will reject it.

Another proposal we understand has been submitted is a return to airborne holding. I can assure you that the vast majority of airline pilots operating in the system do not support any such initiative. We firmly believe that the traffic flow management procedures now in effect, including the in-trail spacing, should continue until full performance level controller staffing quotas are filled and the controller work force gains additional seasoning. The procedures now used have been effective in maintaining our excellent safety record, which we would hate to see jeopardized.

Therefore, with the exception of the minor holding required to fine tune arrival sequences and to ensure one hundred percent utilization of existing capacity, we would not endorse any effort to implement airborne holding as a matter of procedure.

Yet another request made by the airlines is for the FAA to approve a procedure whereby IFR aircraft could conduct a mix of simultaneous precision and nonprecision approaches to converging runways. The current approved procedure of simultaneous converging approaches using only precision ILS approaches was developed only after considerable discussion and compromise within the industry and a study by the MITRE Corporation. While we cannot categorically say the proposal is unsafe, we certainly would not be willing to endorse it until the same amount of study and consideration which resulted in the formulation of the first concept has been completed and the entire aviation community has had the opportunity to review and comment on the idea.

I should like to say that we are not singling out the airlines for their questionable ideas for increasing capacity. The FAA also has to take its share of blame in this department. For instance, the FAA recently issued an order that allows controllers to reduce separation on final approach from 3 to 2½ miles. Prior to implementing this procedure, criteria were established and three test programs planned. Unfortunately, the criteria were not met, nor the trial programs completed, but the procedure was implemented anyway. Missing in the FAA's evaluation of the effects of reduced separation were data relating to wet runways and an adequate number of pilot comments on the procedure. Only 32 pilot questionnaire forms were received, and even those were poorly analyzed. In our opinion, this is precisely how a proper test and evaluation program should not be conducted. Separation should not have been reduced until a proper test was completed and the data validated.

Other airline proposals include better aviation-oriented training for weather forecasters and the installation of additional instrument landing systems at selected airports. We strongly endorse both of these recommendations, as we do the construction of runways for slow aircraft at specific airports.

In addressing the subject of airborne collision avoidance systems, I'm afraid we must again focus our attention on another tragic midair collision, this time near Salt Lake City. I am sure you are aware that the FAA Administrator has announced that in 1987 he will issue a Notice of Proposed Rulemaking that would mandate the carriage of what we understand will be TCAS II equipment on commercial airliners.

ALPA received this announcement with mixed emotions. On the positive side, his decision could reverse a previous FAA position that had left such a decision up to individual airlines. We applaud him for this action. On the negative side, we strongly believe he's considering the wrong equipment! Let me tell you why we feel so strongly about this issue.

TCAS II has several critical deficiencies:

(1) It can provide only vertical escape maneuvers. In the real world, when pilots are confronted with a conflict they can see, they frequently choose to turn rather than climb or descend because they know the normal separation standards are much greater in the horizontal plane than in the vertical plane. This was validated at the January meeting of the TCAS III Pilot Working Group, where members directed the MITRE representatives who are developing the system logic to choose a horizontal maneuver whenever the aircraft is in straight and level flight. This is important because the vast majority of flight time is conducted in visual flight conditions, and TCAS performance should mirror normal pilot preferences to the extent possible.

(2) In its present configuration, TCAS II gives excessively high alert rates. This is primarily due to the poor quality of its antenna. Even with possible improvements, the system will not perform as well as the TCAS III, according to a recent MITRE simulation that used actual recorded Chicago area traffic data. It is critically important to have the system which provides the lowest number of alerts so that pilot confidence in system performance is not degraded, particularly in high density terminal areas such as New York, Chicago, and Los Angeles.

(3) There are times when vertical maneuvers are not appropriate. When an aircraft is in a high drag configuration with gear and flaps down, applying power and turning would probably be the preferred maneuver. Also, when an aircraft is operating at the top of its service ceiling, it may not be able to generate the performance required to respond to a vertical climb advisory. To resolve this problem, a modification to system logic would be required, which would allow a descent only. This would result in losing fifty percent of the capabilities of the system at altitude.

These are the key reasons ALPA cannot support the TCAS II. As for the TCAS III, a great deal of work has already been done on this system. For example, work has begun on a Minimum Operational Performance Standard (MOPS) that will describe the system in detail. A prototype system has been installed in an FAA B-727 at the FAA Technical Center for approximately two years. We believe this system has had an outstanding flight test program, and we are impressed with the excellent data it has produced. The FAA is obviously proud of the system, as it demonstrated it to an international group assembled in Ottawa, Canada, last October. Members of the International Civil Aviation Organization (ICAO) Secondary Surveillance Radar Improvements and Collision Avoidance System Panel (SICASP) have expressed an increasing interest in the TCAS III and have indicated a desire to publish standards and recommended practices for worldwide distribution through ICAO.

We are confident that if the FAA pilots who have been flying this system were here today, they would indeed testify favorably as to the performance of TCAS III. The maturity of the system is further validated by the fact that versions of collision avoidance logic have been tested both in flight and in computer simulations with excellent results. Of course, future refinements in this logic will make it an even better system. An additional feature of the TCAS III that I have not mentioned is its ability to reduce the magnitude of avoidance problems caused by altimetry errors of the threat aircraft. The ability of the TCAS II to provide a successful vertical escape maneuver is directly related to the relationship between the electronic altitude signal the threat aircraft is transmitting and where the aircraft actually is. You may be aware that there can be a significant difference between the two. However, when a horizontal escape maneuver is selected by the TCAS *III*, this problem is not a factor. Similarly, the impact of the bothersome "fake out" maneuver that plagues the TCAS II can be significantly reduced through the use of the horizontal maneuvering.

An additional feature of the TCAS III that has not been mentioned is its potential to provide future economic as well as safety benefits. Through the use of the onboard traffic display system, pilots may be able to monitor both preceding aircraft and those operating on parallel flight paths and thus reduce the separation standards currently used. This could have the effect of increasing both terminal and enroute capacity while maintaining an acceptable level of safety. Based on the performance capabilities of the TCAS III to date, we do not see any reason why such a concept could not be implemented.

Mr. Chairman, for at least twenty years the industry has made sporadic attempts to develop a collision avoidance system. I am sure there is enough blame for all to share for the concept's never reaching fruition. Perhaps it was not justified earlier because of lesser demands on the system. But all that has changed! Deregulation is now with us. The number of airlines has proliferated, National Airspace System Plan improvements appear to be sliding considerably, and a crippling strike has decimated the experience level of the controller work force. As even the ATA has stated, the ATC system cannot today accommodate system demands, many terminal areas have reached their saturation point, and certainly the increasing number of near midair collisions should be an indicator of what is to come.

We no longer can afford to procrastinate. The technology now exists to manufacture an effective collision avoidance device for air carrier aircraft. What is needed is the leadership to do so. Unfortunately, I cannot say the FAA is providing that leadership. For example, the FAA has stated that they do not intend to fund a TCAS III Limited Installation Program (LIP) as they have for TCAS II. Why? Without such a program, it is doubtful if the TCAS III will ever materialize, and the traveling public will again have to settle for a Band-Aid fix for a severely wounded ATC system.

We do have some recommendation, Mr. Chairman, that, if implemented, we believe would provide the aviation public with the best collision avoidance system available. Those private pilots and operators who desire a less capable system certainly should be able to buy one. But the passenger who buys a ticket on a commercial airliner should be able to take comfort in the fact that the flight crew has been provided a system that will use the full operational capabilities of the aircraft in avoiding a midair collision. The TCAS II endorsed by the FAA cannot do that! It appears its selection could be attributed to mitigating liability rather than solving the problem.

Recommendation 1.—The FAA should establish a TCAS III program office that would include the fulltime services of representatives from Flight Standards, Air Traffic Service, and the appropriate certification office. This would reduce the bureaucratic coordination process and allow expert input in those areas as system development progresses.

Recommendation 2.—The FAA should dedicate the use of their B-727 to the TCAS program for the purpose of flight testing logic changes and whatever other tests are needed for system certification.

Recommendation 3.—The FAA should do one of the following:

(a) Develop a TCAS III Limited Installation Program, or

(b) Modify one of the planned TCAS II LIPS to accommodate TCAS III operational testing.

Congress should provide the additional funding necessary for this task.

Recommendation 4.—A Minimum Operational Performance Standard for TCAS III should be developed and published as quickly as possible for industry guidance and certification purposes. This could be accomplished by the summer of 1987.

An additional point that applies to the entire TCAS program is the recent Air Transport Association petition which, among other things, asks for the mandatory carriage of altitude-reporting transponders on all aircraft operating in controlled airspace above 4,000 feet and in terminal areas served by radar. We have strongly endorsed this proposal and hope the FAA will expedite it to the maximum extent possible. No TCAS system will be one hundred percent effective until such a requirement is satisfied.

Another area of interest on which you asked for comments, Mr. Chairman, was the FAA proposal to expand and standardize the Terminal Control Areas (TCAs) at the nation's 23 largest airports. In June 1982, the FAA convened a National Airspace Review Task Group and charged them with the responsibility of making specific recommendations on Terminal Control Areas. As you know, the recent Aero-Mexico midair collision occurred within the Los Angeles TCA airspace. Two of the recommendations made by the NAR Task Group dealt with the design of TCAs and the training of pilots on the complexities of the ATC and National Airspace System. We would like to point out that navigating around TCA airspace is not necessarily a simple task. In many cases, it requires the skills of both accurate map reading and the proper use of VHF navigation equipment. For the new or infrequent general aviation pilot, both tasks can be challenging and, if not properly done, can result in the penetration of TCA airspace, such as happened in Los Angeles.

We are not saying that such a lack of skill was responsible for the intrusion into the Los Angeles TCA by the general aviation pilot involved. However, such penetrations occur with alarming frequency at all TCA locations. Therefore, the recommendations by the 1982 Task Group to simplify TCA designs and to mandate a pilot education program were indeed appropriate, and since the current FAA proposals reflect what the 1982 industry efforts concluded, we strongly endorse this initiative and hope that it can be hurried to fruition.

In answer to your question, Mr. Chairman, as to how safety has been impacted by airline deregulation, I would like to assure you that our air transportation system is not suddenly coming apart at the seams. Instead, what we *are* facing is a slower but potentially more serious erosion of the entire safety system, which started in 1978 and will continue through 1987 and beyond. There are two primary causes for this erosion and both are byproducts of airline deregulation.

The rationale is simple. First, safety costs money, and price competition means that airline managers are being forced to make tough decisions on safety expenditures. All too often, safety is losing out to cost-cutting—not everywhere or every time, but enough to cause concern.

That doesn't necessarily mean that airlines are violating safety regulations, although willful violations by unscrupulous carriers appear to be on the rise. The main problem is that rapid expansion within our industry has diluted the overall experience level of the personnel who make decisions which affect safety. These decisions are made at the CEO level and throughout other levels in organization and, due to a lack of experienced management, may not always turn out to be in the best interest of safety.

You should understand that carriers do not have to break the rules to make cost-saving safety cuts. Most major airlines exceed FAA minimum standards. It is this extra safety margin, not the less stringent FAA minimums, that gives us our excellent safety record. Unfortunately, those extra safety margins are threatened by price competition. Cost-conscious managers shave a little bit here, a tad there, while the FAA offers its technically correct but misleading assurances that most airlines are operating within legal limits. Furthermore, these assurances are based on a limited ability to assess accurately what is really happening on the operators' property.

Now to the second cause of the current erosion of safety, which is the unwillingness of some in government to recognize that deregulation has costs associated with it. These are the costs required to provide the FAA the means to keep up with a rapidly expanding industry.

To its credit, the FAA is making an earnest effort to keep the system safe, but it can't do that with its current resources. Even with the recent authorization to hire 500 additional inspectors, the FAA won't be able to fulfill all its inspection and enforcement responsibilities.

The special FAA "white glove" inspections in 1984 and the special emphasis placed on maintenance inspections in 1986 were appropriate actions, and we welcomed them.

However, both these efforts confirm what we and others have been saying all along: The FAA cannot do the job properly on a routine, day-to-day basis with its current manpower and budget. This assessment is supported by the Memorandum on Evaluation of National Air Transportation Inspection Program Reports issued in April 1985 by the FAA.

Slowly but inexorably the combined effects of cost competition, explosive growth, increased crowding in the skies, and the FAA's inability to cope are pushing us in the wrong direction, and we believe Congress must act soon to reverse this trend.

As for your question on how funding shortfalls have affected aviation safety and the National Airspace System Plan, we should look at the current slippage in the programs contained in the "Red" and "Brown" books to address this issue properly and reflect on the funding constraints over the past years. This should tell the story!

While the Administration has proposed a 20% increase in the FAA budget for fiscal 1988, this will do little to correct the problems and shortfalls created by the Administration's refusing to provide adequate funding in the past. At this point, I would like to say that if there was ever an issue that united the entire aviation community, it is the issue of funding—more specifically, removing the aviation trust fund from the general fund and making monies available for the safety and capacity improvements needed to support a healthy growth in aviation. Just a few days ago, the Air Traffic Control Association sponsored a symposium in which members from aviation-oriented associations and three former FAA Administrators commented on the Air Transport Association proposal to form a federal corporation which would operate the ATC system independently from the FAA. This proposal was spawned by the frustration of the airlines over the inability of the FAA to provide the services needed to accommodate an increasing demand for air travel. Each representative at that symposium clearly stated that the trust fund must be liberated and used for the purpose which it was intended.

Looking to the future, we cannot overemphasize the need to ensure that adequate funding is provided to the FAA and to NASA for the research and development that will be necessary to implement a future system based on space technology. We must be leaders in this field and the system should be ready.

We hope these comments have been responsive to your questions, Mr. Chairman, and we are prepared to answer any questions you may have.

Again, we thank you for the opportunity to appear before the Subcommittee.

Senator FORD. The next witness and the final witness for today is John Thornton, National Coordinator, National Air Traffic Controllers' Association. I believe he is to be accompanied by Dennis Delaney.

I see that we have more than one controller. John, would you introduce your companions, please?

STATEMENT OF JOHN F. THORNTON, NATIONAL COORDINATOR, NATIONAL AIR TRAFFIC CONTROLLERS' ASSOCIATION, ACCOMPANIED BY DENNIS DELANEY; AND HOWARD BARTE

Mr. THORNTON. Good morning, Mr. Chairman. With me today to my left is Howard Barte, a controller at Providence Control Tower. To my right is Dennis Delaney from the Pensacola Tower. Both are actively involved in the organizing efforts for NATCA.

Senator FORD. Did you say organizing efforts?

Mr. THORNTON. Yes, sir.

Senator FORD. You may proceed with your statement. Your full statement will be in the record. If you want to highlight it, that would be fine.

Mr. THORNTON. Thank you, Mr. Chairman.

Might I first congratulate you, Mr. Chairman, for your appointment as Chairman of the subcommittee. NATCA looks forward to working with you, with Senator Kassebaum, and with the entire subcommittee to insure that our nation has a safe and efficient air traffic control system.

Mr. Chairman, as you know, NATCA recently filed a petition with the Federal Labor Relations Authority to call for an election on controller representation. We far surpassed the minimum number of signatures needed to trigger an election, and we are confident that an overwhelming majority of controllers will vote for NATCA when the election is held this spring.

The air traffic controllers are building a professional association for a number of reasons. There are, of course, traditional issues such as working conditions, redress of grievances and bargaining. We are, however, concerned as well about the larger issue of air safety and the public's right to the best air traffic system that is possible to provide.

As professionals who are on the line day after day working air traffic, we believe that we can make a positive contribution to maintaining and improving our nation's air traffic system. We believe that we should be consulted by the FAA when decisions are made regarding the integrity of the system. Air safety is simply too important not to include every source of advice.

Furthermore, we believe that the public and the Congress also need to hear the controllers' voice. It is not enough that those within the system talk merely to themselves. The American people need a balanced picture of the strengths and weaknesses of the air traffic control system so that informed decisions can be made. We can help provide that balanced picture and, in doing so, help serve the public.

Our bottom line concerns are not budgets and bureaucratic politics. We care about safety and lives. Mr. Chairman, we are constantly asked whether the skies are safe. From an air traffic control perspective, the answer is a qualified yes, but that yes could easily become a no in a very short period of time if we do not start rethinking the way we manage air traffic and air traffic personnel and make some long overdue changes.

Mr. Chairman, I have submitted a full statement for the record which details some of the serious problems our air traffic control system faces. Some of the solutions we recommend respond to each of the questions raised in your letter of invitation. Rather than summarize everything in the statement, I would like to emphasize several points.

The first is restoration of the reporting immunity system in place prior to 1980. Two weeks ago, controller representatives from every FAA region met for two days of NATCA meetings in Washington. We discussed what could be done on a near and a longer-term basis at great length.

On one issue we are absolutely unanimous, the need to restore the pre-1980 immunity provisions. These provisions encourage those in the system to report even their own errors so that we can all learn so that the system can be improved. I should note that immunity did note cover cases of gross negligence, criminal offenses nor accidents, nor should it today. There is one step that the Congress could take now to immediately improve air safety by legislative action. It would be to restore these immunity provisions.

My second point concerns the Aviation Trust Fund which was established by act of Congress to improve air safety and operations. Today the fund has over—I repeat—over $4 billion in it. These billions have been collected from every user of commercial and general aviation in the country, yet these billions have, for all intents and purposes. been sequestered by the Office of Management and Budget and counted instead in general funds of the U.S. Treasury. I submit that this clearly perverts the intent of the Congress and public.

At a time when controllers are forced to operate with outmoded equipment and software, when new controllers need to be hired, when the air traffic system is reporting more and more near misses, it is irresponsible and, indeed, dangerous that the OMB has been allowed to get away with the diversion of funds. Speaking for NATCA, I urge the Congress and groups representing all sectors of aviation such as ATA, ALPA, AOPA and GAMA to join together to free this money for the purposes Congress and the American public originally intended.

Mr. Chairman, we have additional recommendations, such as establishing the Aviation Safety Commission required under Public Law 99-591, such as restricting air traffic to 1981 levels until the system is strengthened, such as increasing the numbers of controllers and FPL controllers.

We also make clear our opposition to the reinstitution at present of holding traffic above an airport, and we make clear that we believe air safety would be jeopardized if a corporation was set up to run the FAA.

However, instead of discussing these in detail, I would like, with the Chairman's permission, to yield the balance of my ten minutes to the two working controllers who are here with me today. They are in the system now, and they can provide the operational perspective that I believe is important to the committee to hear.

Senator FORD. That is fine. Go right ahead, gentlemen.

Mr. DELANEY. Mr. Chairman, my name is Dennis Delaney, and I am a controller at the Pensacola Tower in the FAA southern region. This region covers eight states, Puerto Rico and the Virgin Islands. I would like to briefly cover our staffing situation.

At the Pensacola Tower where I work, our controller numbers are 40 percent less than in 1981, yet we handle the same number of aircraft. At other facilities in my region, like Atlanta Center, the situation is worse, fewer controllers as well as an ever-increasing number of operations. Some facilities in our region operate with only 30 to 40 percent of the FPL controllers they should have.

Curiously enough, Mr. Chairman, at our facility in Pensacola we have the same number of supervisors and staff as in 1981, though the number of controllers has been almost halved. At our particular facility, where the situation is relatively less serious than at others, our nonscheduled leave is still severely curtailed while the use of overtime is restricted, a restriction that we have been told is due to the budget limitations and not due to any desire to restrain the individual controller workload.

Mr. Chairman, my fellow controllers and I have been willing to take on a greater burden of the work since 1981. We have made personal sacrifices in almost every case to keep the system working and safe. During this time, we hoped and we were told that the overall system would be returned to its full 1981 capability and more. That capability has not been reached, and each day the workload continues to outrun the staff levels necessary to perform it with maximum safety.

After six years, the system can no longer critically run on business as usual on promises of new equipment or more controllers. The system needs your help and attention now. As one controller in the system, I thank you for these hearings.

Senator **Ford**. You may proceed.

Mr. **Barte**. Thank you, Mr. Chairman. My name is Howie Barte. Since my colleague covered staffing in his statement, I would like to cover equipment problems, although I would like to emphasize that facilities in my region, the New England region, have exactly the same staffing problems as his region, if not worse.

I have been an air traffic controller in the FAA for almost 12 years. Since 1981, I have been appalled at the increasing deterioration of equipment which is essential to the air traffic controller and to air safety. The equipment problem is twofold. First of all, much of the equipment used by the air traffic controller is worn out and antiquated. Examples abound within the ATC system. Flight data entry printout equipment is cannibalized at one facility so that another facility can continue to operate. Radar and computer outages cause undue stress upon the controller and unnecessary delays to the flying public.

Newer equipment, such as flight data input/output equipment purchased by the FAA cannot be brought on line because of the FAA's apparent predilection for purchasing equipment from companies about to go bankrupt. This leaves equipment often incomplete and useless to us in our controller operations.

Furthermore, substandard equipment, such as vital communications equipment like the inter communications switching system which has been purchased and installed without controller input, never seems to function correctly.

The second major class of equipment-related problems we experience relates to repair technicians. The ranks of FAA's electronics technicians who try hard to maintain this equipment have been steadily reduced due to FAA's policy of not replacing technicians who retire or resign. At many facilities technicians are now on an 8 to 4, Monday through Friday schedule. This is despite the fact that air traffic continues to move virtually 24 hours a day.

In addition, the equipment that we have needs maintenance both in repairing the equipment and in preventative maintenance. When this equipment fails after normal working hours, the air traffic controller is often left with a crippled system in which to control the air traffic in the sky.

These, Mr. Chairman, are just a few of the examples of the equipment problems that the ATC system faces around the country and in my region. The problem here is in money and in management. Management problems take time to solve, but they have to be addressed in any improvement of the system. Budget problems can be solved sooner, and the funds to do it are sitting right there in the aviation trust fund. As my colleague, Dennis Delaney, just said, we cannot risk continuing with business as normal or budgets as usual in the air traffic control system. These problems have to be addressed now, not five years from now.

As with my colleague, I thank you for holding these hearings.

Senator **Ford**. Dennis, how many controllers would move from Pensacola, Florida to Boston, Massachusetts?

Mr. **Delaney**. None.

Senator **Ford**. How many from your area would move to Denver, Colorado?

Mr. **Barte**. There may be a few, but in my area they would be hardpressed to release them.

Senator **Ford**. You are from Providence?

Mr. **Barte**. That is right, Providence Air Traffic Control Tower.

Senator **Ford**. That is one of the issues that gets into high density. You have to train them to get them in, and you need the experience to move into high density, and you cannot get any of those who have the experience to move; so, therefore, that is one of the problems I think they face with controllers in the basic 13 problems areas. At least, that is the information we have been gleaning from some of the hearings and the testimony that we have received.

So it indicates that not a one would move from Pensacola. I probably would not want to move from there to 24 inches of snow, either, but nevertheless the experience in that area probably is more important than in an area where you would not encounter this kind of winter weather.

Mr. Thornton, let me ask you a couple of questions. I believe my colleagues have left, and we may get out of here for lunch today.

In view of the fact that FAA continues on its procedure as it relates to the number of full performance level controllers, what is your position on returning to a planned airborne holding and a reduction in the separation of aircraft?

Mr. **Thornton**. Mr. Chairman, our position, NATCA's position, is we are against any increase in the airborne holding. The system is stretched to its limits today. Any significant increase in the amount of traffic into the system or a decrease in the amount of controllers working that traffic could have very troublesome connotations to us.

We believe that by putting more aircraft in the air, we would be just asking for trouble. We propose that the FAA restrict the amount of traffic back to the 1981 levels of traffic so that controllers can start working five-day work weeks so that we can cut down on the use of overtime to maintain the system and so that we can increase our training of the new developmental controllers to make them FPL controllers.

Senator **Ford**. When you say cut back to 1981 levels of air transportation or air traffic, what does that do to those companies who are out there scrambling now, trying to keep their head above water, so to speak, in this competitive, deregulated airline world?

Mr. **Thornton**. I am sure it would be troublesome to them. The problem, however, is that we see if the system keeps growing at its present rate, it will far exceed the ability of the air traffic controllers to successfully manage it.

Senator **Ford**. Well, if you would reduce it to 1981 levels of air passengers——

Mr. **Thornton**. Of air traffic.

Senator **Ford**. Air traffic. Well, let us look at the number of passengers. How many passengers flew in 1981?

Mr. **Thornton**. I do not have these figures.

Senator **Ford**. Two hundred seventy-five million. Do you know how many flew last year? Four hundred fifteen million. So if you tell the airlines to cut back to the traffic of 1981, their business would be cut in half.

Mr. **Thornton**. That may not necessarily be true. With scheduling arrangements, you would have less aircraft in the system but you would have more aircraft filled to capacity as they are taking off.

Senator **Ford**. Well, we find the problem here, Mr. Thornton, in the testimony that there are certain hours that your passengers want to take off, and so airplanes are all out there, like Senator Byrd testified. They are trying to get X number of airplanes off in X number of minutes. They want to come in the morning, spend the day, and go out in the evening. If you start eliminating those evening flights, which are basically full compared to those in between the early morning and evening, then you are going to have an overnight stay. This will make it more expensive for the individual to come in, stay and do his business.

So I am just laying out some of the problems.

Mr. **Thornton**. We understand the implications. The problem we have, however, is a work force that is being worn out. Many controllers in the system have been working six-day weeks for the majority of the time since 1981. We think that the work force needs a rest. They need to pull back. They need to be able to schedule time away from the facility and need to provide the training to the developmental controllers that they are unable to handle right now because there is too much traffic.

Senator **Ford**. Well, if we would accomplish what you are calling for, it would essentially be reregulation. Is that what you are indicating?

Mr. **Thornton**. No, sir. After the strike in 1981, the FAA imposed restrictions on the amount of traffic that was allowed into the system. I believe it was December of 1983 when they cancelled those restrictions.

We would like to see some restriction placed on the amount of traffic.

Senator **Ford**. In order to make the required level for full performance controllers, the FAA has advocated the use of accelerated training methods to arrive at this level. How does this type of training compare to the type used prior to the PATCO strike?

Mr. **Thornton**. We are not familiar with what the FAA is suggesting as "accelerated training." I believe what you may be talking about is the time and grade restrictions that were in place through the waiver, I believe. We agree with that. If a person is performing a task at a certain level, he or she should be compensated at that level.

Senator **Ford**. I will ask a couple more quick questions. The general aviation industry is opposed to requiring that all aircraft be equipped with Mode C Altitude Transponders because they were concerned that the current controller work force could not absorb the resulting additional information. Do you agree with this stance?

Mr. **Thornton**. We believe that the more information available to the controller, the better the system would be.

Mr. **Delaney**. I would like to say something about that.

Senator **Ford**. All right, sir.

Mr. **Delaney**. Just a little earlier we had a question asked——

Senator **Ford**. You are under the gun every day, so we need your advice and counsel.

Mr. **Delaney**. The question was asked and answered a little earlier about the Mode Cs for general aviation, and one of the statements was that the capacity of the air traffic controllers is such that he cannot issue conflict alert, cannot issue advisories, cannot issue traffic. He is right. We have a difficult time doing it, because there are an awful lot of targets out there.

If those aircraft had transponders with Mode C on them, then the only traffic would be real traffic. In other words, right now if an aircraft is flying out there without a transponder and I have an aircraft at 10,000 feet flying along and I see a target within proximity, I have no idea what his altitude is, so I must issue it if I have time, with my other duties.

Now if I know that aircraft is at 9,500 feet, I am going to issue that traffic every time. There is no doubt in my mind, if he has got a Mode C. So when I get busy, if I am only issuing Mode C traffic, I have the time. Does that make any sense?

Senator **Ford**. Well, if I am out there flying at 9,000 feet and I do not have a transponder, then if you are busy you will not be able to tell the other pilot that I am out there? Is that what you are saying?

Mr. **Delaney**. If I do not see you, I do not. What I mean is, if I am not talking with you. If you are not under my guidance, and you can be. You can be out there flying in the system without talking to me. That is quite legal.

Senator **Ford**. So I can just take off and fly and do whatever I want to, and you have no way of knowing whether I am out there or not?

Mr. **Delaney**. I see a target, but I do not know what altitude you are at. Now if I am real, real busy and I have a lot of airplanes, that becomes a secondary—it is a very important thing; but it becomes a secondary thing for me to issue that traffic. But if I have a Mode C and I see the altitude on that aircraft, and I see you in close proximity, I am going to issue the traffic.

Senator **Ford**. The Mode C would tell you at what altitude the unidentified aircraft would be flying?

Mr. **Delaney**. That is correct.

Senator **Ford**. With a transponder, you automatically know that——

Mr. **Delaney**. That is correct, with a transponder Mode C.

Senator **Ford**.—I know nothing about flying, but if you tell me to put it on 1240, and I adjust my transmitter then the thing will start blinking back at me. At that time you and I are in communications. Is that correct?

Mr. **Delaney**. That is correct.

Mr. **Barte**. Mr. Chairman?

Senator **Ford**. Do more of the collisions or near-misses occur during clear weather than in bad weather, foggy weather, or cloudy weather?

Mr. **Delaney**. I really would not know.

Senator **Ford**. What happens in your general area? How many near-misses have you had in the last five years?

Mr. **Delaney**. Me, personally?

Senator FORD. Yes, that is who I am talking to.

Mr. DELANEY. Okay, sir.

Senator FORD. I do not want you to speak for anybody else; just speak for yourself.

Mr. DELANEY. Three.

Senator FORD. Three in the last five years.

Did you want to comment on something?

Mr. BARTE. Yes. I just wanted to add, Mr. Chairman, that Dennis is talking about traffic that you can see but you do not know his altitude. I personally witness traffic that you cannot see because the aircraft does not have any transponder, and the primary radar, which is the skin paint of some small aircraft, for some reason is not painting on the radar, or there would be inversion, equipment misadjustment, whatever the case might be; whereas, with the transponder he is there. That target is there.

I have had aircraft call me and say, who was that aircraft that just passed, just came into my windshield, and I have no target on my radar.

Senator FORD. What is the difference between a transponder with altitude reporting capabilities and a transponder without one? Can you pick up that bleep out there? You know he is out there, as we were discussing, but you do not know the altitude. Can you see all aircraft?

Mr. BARTE. An aircraft without a transponder, the radar simply sends a signal out that bounces off the skin of the aircraft and is received back.

Senator FORD. So you know it is out there, you just do not know the altitude.

Mr. BARTE. If the equipment is working and functioning correctly.

Senator FORD. Which equipment? Yours?

Mr. BARTE. The radar. Yes, my radar. And depending on atmospherics——

Senator FORD. How often does yours not function properly?

Mr. BARTE. I would say that you could probably expect quite a number of days during the summer when you have temperature inversion, things of that nature. Also, equipment——

Senator FORD. Now you say your equipment is out? Or it just will not bounce off of that airplane?

Mr. BARTE. It simply does not bounce. It simply does not show up on my scope.

Senator FORD. Your equipment is working, but it will not bounce off of the airplane?

Mr. BARTE. It is not being received by the radar. And again as I say, I have had pilots report a near-miss with aircraft that simply are not on the scope.

Senator FORD. I have flown over Fort Knox, too, or close by, and they are scary when they come by and you do not know about them.

But with Mode C, you would be able to identify that aircraft regardless of the summer temperature inversion?

Mr. BARTE. That is correct, even if the aircraft is not talking to anybody.

Senator FORD. Are you all concerned, or do you believe that we are getting better reports on near-misses than we have in the past? It is really up to the pilot to report it, is it not? Is it mandatory on the pilot?

Mr. THORNTON. Prior to 1981, the near-miss and system error reporting was done 70 percent by the controller and 30 percent by the pilot. We find a drastic change in that since 1981. It has turned around to 80 percent of the incidents are reported by pilots now, and 20 percent are being reported by the controllers. The controllers are reluctant to come forward and make these reports for fear of disciplinary action by the employer.

Senator FORD. The testimony yesterday indicated that they feel the 1985 and 1986 figures are adequate, that is, fewer near-misses are falling through the cracks. Would you agree with that?

Mr. THORNTON. I would agree that the numbers are significant now, and they are much higher than initially reported two years ago when 3 to 400 fell through the cracks. I think there is just more focus and the FAA has to do a better job of reporting those figures. I think that had a lot to do with it.

I still believe there are a lot of incidents that go unreported, daily.

Senator FORD. I am going to yield now to my colleague.

Senator EXON. Thank you, Mr. Chairman.

Gentlemen, thank you for coming. The type of information we are getting in this hearing is tremendously helpful to us.

First, let me ask this question in trying to focus on this safety matter once again. Am I safe in saying that we have a good degree of safety in the less-density, traffic-wise airports in the country than we do at the major places like O'Hare. Let me try to maybe clarify my question a little bit further. I have a feeling that where we do not have a high density of traffic, that even under the present system we have near maximum safety control of the aircraft coming in and out of a specific point, but the problems occur in the high density areas such as O'Hare. Do you agree with my feeling?

Mr. THORNTON. Well, without having any information broken down that way, I would have to agree with your point for several reasons, one being there is just a tremendous amount of traffic in those areas; and, two, in most of those areas there is such a reduced workforce that the controllers are working long hours, spending more than the optimum time on busy positions. So you have a situation that is not healthy.

Senator EXON. Let me try and pin you down a little bit more to see if we are coming from the same place, Mr. Thornton. If either one of you gentlemen flanking him wish to say anything about this, why speak up.

If you were a life insurance underwriter, and with your experience as an air traffic controller, would you increase the premium for a pilot on a given commercial airplane that is landing an airplane each day in O'Hare? Would you have him at a higher premium than a pilot landing the same aircraft at a less density airport such as Lincoln, Nebraska?

Mr. **Thornton**. I would imagine that would be correct. It would be the same as saying that it is safer to ride on H Street at 2:00 o'clock in the afternoon, as opposed to the Beltway at 4:30.

Senator **Exon**. And could not that be significantly improved, though, if we had more staffing with the most experienced controllers available at the major points such as O'Hare?

Mr. **Thornton**. O'Hare does have a staffing problem currently, as do most of the other high density facilities.

Senator **Exon**. And is that a problem of not having enough properly trained personnel? Or is it not moving enough controllers from less density airports into the Chicago area? Or is it a combination of both?

Mr. **Thornton**. The situation at O'Hare, it is not an attractive facility for controllers to voluntarily go to for several reasons: The cost of living in the area, plus the way the salary is structured today, there is a top, a GS-14 level, for an air traffic controller.

The controllers at O'Hare and several other major terminals, are working so much traffic above that minimal number to qualify for that salary that it loses some of its attractiveness.

Senator **Exon**. Why have we not considered having a 15 or 16 level salary enhancement to attract more people to a city like Chicago? Or do we have that now with the 14 level?

Mr. **Thornton**. We do not have that ability to have journeymen controllers go into air traffic positions in the field anywhere above the GS-14 level. It would be an interesting recommendation, and I feel quite certain that we would be in support of that.

Senator **Exon**. I guess what I am saying is that we have pretty well established that our major problems in our air traffic control system are in the major population centers where we have high density of traffic. It seems to me that we had better take a look at the situation of having some kind of an additional attraction for the highly qualified people to go into these areas. I happen to feel from the investigations that I have done that people are already pretty heavily overworked in those areas.

But I do assume that in O'Hare, for example, an air traffic controller would not work as long at his station as would an operator in a smaller city. Is that right?

Mr. **Delaney**. I agree.

Senator **Exon**. But we need more personnel in the O'Hare's, do we not?

Mr. **Thornton**. That is correct, and some sort of incentive plan to bring controllers into these higher density and troublesome staff facilities I think would be a good recommendation.

One of the other problems, however, is that the controller is—it is a much more stressful situation in O'Hare as opposed to Hagerstown, Maryland, say. When a controller goes into that high density position, the FAA is very reluctant to let them remove themselves from that facility. If they have been there for several years and they are starting to feel themselves burning out, they would have to look to bid into a management position, or a staff position, because they could not bid down into a less demanding position because once you get into those facilities, you are almost trapped.

If we could work some incentive plan to get them in and allow some method to let them exit after they have spent sufficient time there——

Senator **Exon**. Are you telling me that you have difficulty moving air traffic controllers out to the field after they have had enough of O'Hare to Lincoln, Nebraska, for example?

Mr. **Delaney**. I came into Atlanta Center in 1968, and I was told, you are in Atlanta Center, you are going to die in Atlanta Center. Basically that is the way it was, because it is a high density facility. I fooled them, but it is difficult to move from a high density facility to a lower density facility.

First of all, the government will not pay your way. Even on hardships, a lot of times you cannot get them to pay your way. There is no down movement. It is always up. The only way out of a high density facility is in a management position.

Now you can go to a management position at a lower grade and it is still a promotion, so you can go downgrade that way.

Senator **Exon**. I guess what I am saying is we cannot have everybody making GS-14 today, and we cannot have everybody making GS-15s and 16s. I think for a program like that to work, we would have to have the understanding that you make that 15 or 16 level while you are in Chicago or Atlanta, but if you want to move to Lincoln, Nebraska where you can enjoy a much higher quality of life without shuddering in front of those screens in front of all those airplanes, you would make less money.

Mr. **Delaney**. Absolutely. We have no problem with that.

Mr. **Barte**. Senator, if I may just add to that, part of the problem in getting people to go to places like Chicago and New York is that the facilities that they could come from, the lower level facilities, are also short-staffed. In my region, for instance, there is a terminal radar approach control facility that had 24 full performance level controllers before the strike. Today they have 12. Nobody can leave that facility. And they are radar controllers that could be very well used in Chicago.

This continues to exist throughout the system. There are facilities that are very well staffed. There are middle level facilities that are very poorly staffed. My region abounds with an example of every single kind. I have no answer as to why these facilities continue to be understaffed, but people cannot move.

There is one additional problem. Right now in the FAA, PCS money, which is permanent change of station money, is very tight. They put a job out for bid. They select somebody for the job. Then they will not move them. This is happening today in my facility. There is an example of this going on right now.

Senator **Exon**. They will not move them because they claim they do not have the budget to do it?

Mr. **Barte**. That is correct. However, when a management position comes open, somehow they find the PCS money to move those managers.

Senator **Exon**. I will not ask you why that is.

Mr. **Barte**. Do not ask me that.

Senator **Exon**. I do want to thank you for coming here, and I do want to say that, as you probably know, we held a hearing in November out in the Chicago area of O'Hare. We had some excellent testimony there from a controller which verified the concerns that I have, and we are continuing to look at that.

One last question. You heard the discussion that we had with regard to drug testing and alcohol abuse testing. I think sooner or later we are going to have kind of an all-encompassing program in that area for pilots, rail engineers, maybe commerical bus and truck drivers, as well as people that are an integral part of the system such as the air traffic controllers.

Do you have a position, or has your organization taken any position on how they feel about drug testing—whether it should be mandatory, periodic or random?

Mr. THORNTON. First of all, we endorse the abuse-free workplace for controllers. We understand the public's demand for that.

We have some concerns over some of the proposals that have been made. We will be meeting in Washington, our executive board, on February 12 and that will be one of the main topics of discussion to formulate a position for NATCA on drug testing.

Senator EXON. You expect that that will be formulated and announced shortly thereafter?

Mr. THORNTON. I am sure it will be, and at that time we can provide the subcommittee with that position.

Senator EXON. I am pleased to hear that, because I am thinking about maybe incorporating legislation that would treat everyone the same. I do think all of these people are tremendously important, and have high responsibilities to the traveling public for which they serve, whether they are a pilot, an air traffic control center, like yourself, a bus driver, or an engineer on a train.

Basically, I hope we can come up with some kind of a plan that would be fair, reasonable, and get the job done with regard to this matter. Certainly after the recent train accident, this issue has been vividly brought to the attention of the people. They are going to expect us to do something, and they are going to expect each one of the people and organizations that represent the people that serve in these areas to cooperate with us in trying to come up with something that would be somewhat more than just a drug-free cockpit, or a drug-free tower.

Those are buzzwords, or catchwords that mean very little unless we have something to back it up. So if you would furnish me with whatever the decisions that you come up with, it might be helpful in pursuing the legislation that I am suggesting.

Mr. THORNTON. We would be glad to. Several of the problems that we have, however, is with the annual physical and false-positive readings. It is almost a sooner-or-later you will have a false-positive reading when you have 12,500 air traffic controllers taking the test every year.

Also, we are concerned about the FAA's use of just-cause, reasonable cause. We have seen some real unevenhanded dealings within the FAA as to the use of "just cause."

Senator EXON. Well, I agree that we have got to be fair on this, but I guess we should have some backup provisions if someone tests positive on something. I understand that it is possible that someone could be taking some medication provided by a physician, for example, and that would cause a positive test. But as some college football players have recently found out, some of them said that it was not there, or it was misread.

I think you have to have some kind of a program, if you test positive, to go back in for another test to make sure that—in other words, someone is not going to be fired as soon as they test positive, or laid off. We have to have some backup provisions like that. But I do think we want your cooperation in working on that to the end of stamping this out, because we have got to do that to maintain the confidence that the people must have in the overall transportation system.

So we will be looking forward to your input on it.

Mr. DELANEY. Well, we just think it is nice that somebody wants our cooperation. That is nice to be considered once in awhile.

Mr. BARTE. I agree.

Senator EXON. You will be considered, I assure you.

Senator FORD. Would you invite us down to visit with you? What is the temperature down there today?

Mr. DELANEY. About 64.

Senator FORD. Was that when you got up?

Senator EXON. It was 65 in Nebraska yesterday.

Mr. DELANEY. I heard something like that.

Senator FORD. Well, one of the things that I am going to be looking into closely is that the FAA said yesterday they are very close on a national basis to the percentage that was needed for controllers.

They are having a real hard time filling the high density centers and airports. All of you substantiated your reluctance to move to those areas and probably would not move to Chicago or New York. But, how do we get trained people there?

Then you threw me another slight curve this morning, Mr. Thornton. In the high density areas you wear out and burn out, and how do you get out of there?

Mr. THORNTON. Right.

Senator FORD. Well, if you are going to live there for five years where do you go? We used to have good football coaches in a certain area in my state, and they would win and win and win, and one of the incentives that was there was they always became assistant superintendents after they burned out. So we just had a room full of assistant superintendents. I just do not believe we can get into the posture of saying you would automatically go to a management level after five years.

Mr. THORNTON. No, that really was not what we are suggesting. What we were suggesting is that there be some exit availble to that controller at the high density facility to bid down into a less demanding facility. That is what we would ask, so there could be a continual circuit of people coming up, if the incentive was correct to get them to go into these high density facilities, and after an appropriate time at those facilities, if they wished or felt they needed to, to pull away from that demand and go to a less demanding facility.

Senator FORD. As I understand, am I correct that when they go to the Academy for training that when they come out they are assigned to certain places? Am I correct in that?

Mr. DELANEY. That is correct, sir.

Senator **Ford**. So you get your training out in Oklahoma City, and when you come out they assign you to O'Hare, or they assign you to New York. Is that correct?

Mr. **Delaney**. Yes, they do.

Senator **Ford**. So it is up to the FAA then, if they have a shortage in certain areas to assign the graduates, after they have gone through basic training. That is where they go for the real experience. Maybe they cannot blame it all on you for not transferring, then.

Mr. **Delaney**. Well, the terminal system, though, does normally have step-ups. You start at a low density, and you work your way up. That is the way it "normally" works. Now there have been changes because of the strike.

Senator **Ford**. With respect to the advancement that you are referring to, if you do not want to advance to O'Hare, you just stay where you are, then, do you not? They are not going to fire you for not going to O'Hare. They need you where you are.

Mr. **Delaney**. That is correct.

Senator **Ford**. So what you are really saying to me is that instead of assigning them to O'Hare, they assign them to a smaller place to get the experience, then they can go up. But going up would be to go to either O'Hare, New York, or somewhere, and many just do not want to go.

Mr. **Delaney**. Fortunately, we have almost nine FAA's, and I work in the FAA that does not have any trouble getting them in high density facilities because everybody wants to go to Atlanta, or Miami. They like those facilities.

Senator **Ford**. Different regions, yes.

Mr. **Delaney**. We do not seem to have that problem. But other regions have terrible problems. Chicago and New York happen to be two of the places that have very, very difficult times.

Mr. **Barte**. The Boston Air Route Traffic Control Center is short-staffed, also, and they are GS-14, and that is a nice place to live—New Hampshire. It is not Chicago, it is New Hampshire.

Senator **Ford**. And they are short-staffed?

Mr. **Barte**. They are short-staffed.

Senator **Ford**. For controllers, now?

Mr. **Barte**. For controllers, that is correct. But part of the problem is that the FAA does not admit that they are short-staffed, and yet takes on a large piece, seven sectors worth of air space from New York Center and does not staff for that.

Senator **Ford**. It is Vermont that has the strange place where Elks fall in love with cows, is it not?

Mr. **Thornton**. Yes, that is correct.

Senator **Ford**. Well, on that note, the hearing is adjourned.

[The statement follows:]

STATEMENT OF THE NATIONAL AIR TRAFFIC CONTROLLERS ASSOCIATION

Good Morning Mr. Chairman. My name is John Thornton and I am National Coordinator of the National Air Traffic Controllers Association. Accompanying me this morning are Howard Barte, a Controller at Providence Tower and Dennis Delaney, a Controller at Pensacola TRACON. Both Mr. Barte and Mr. Delaney are closely involved in the NATCA organizing campaign and are Full Performance Level Controllers.

May I first congratulate you Mr. Chairman on your appointment as Chairman of the Subcommittee. NATCA looks forward to working with you and the entire subcommittee to ensure that our nation has a safe and efficient air traffic control system. I would also like to thank the previous Chairman, Senator Kassebaum, for her leadership over the past five years and for giving the Controllers a fair hearing. We are most grateful.

Mr. Chairman, as you know, NATCA recently filed a petition with the Federal Labor Relations Authority to call for an election on Controller representation. We far surpassed the minimum number of signatures needed to trigger an election and are confident that an overwhelming majority of Controllers will vote for NATCA when the election is held this spring.

The Air Traffic Controllers are building a professional association for a number of reasons. There are, of course, traditional issues such as working conditions, redress of grievances, and bargaining. We are, however, concerned as well about the larger issue of air safety and the public's right to the best air traffic system it is possible to provide.

As professionals who are on the line day after day working air traffic, we believe that we can make a positive contribution to maintaining and improving our nation's air traffic system. We believe that we should be consulted by the FAA when decisions are made regarding the integrity of the system. Air safety is simply too important not to include every source of advice.

Furthermore, we believe that the public and the Congress also need to bear the Controllers' voice. It is not enough that those within the system talk merely to themselves. The American people need a balanced picture of the strengths and weaknesses of the Air Traffic Control System so that informed decisions can be made. We can help provide that balanced picture and in so doing help serve the public. Their bottom line concerns are not budgets and bureaucratic politics. They care about safety and lives.

Mr. Chairman we are constantly asked whether the skies are safe. From an air traffic control perspective, the answer is a qualified "yes". But that "yes" could easily become a "no" in a very short period of time if we do not start rethinking the way we manage air traffic and air traffic personnel and make some long overdue changes.

NATCA testified twice last year before this subcommittee on air traffic safety issues. During both hearings we stated that the Air Traffic Control System was strained to the breaking point. The FAA had buffered the effects of airline deregulation upon the post-1981 workforce by instituting flight restrictions. But those restrictions were lifed in 1983 and air traffic growth has far exceeded most earlier expectations.

While the air traffic boom is welcome news to some carriers, there is an obvious and potentially very dangerous down side when air traffic control is not allowed to keep pace. According to FAA reports obtained by Rep. Guy Molinari of New York, pilots last year reported 828 near mid-air collisions—up 70 over the 758 reported in 1985.

The FAA attributes the rise to improve reporting procedures. We, instead, agree with Congressman Molinari that the figures show that the system continues to deteriorate at an alarming rate.

One of the primary reasons for this deterioration is that we have had a sharp decline in the number of Full Performance Level Controllers. An FPL Controller is certified to operate in all positions and performs the critical job of keeping aviation safe and orderly. Controllers with less experience and training are important to the system, and, in one sense, they constitute its future. But the FPL is still the core of the system and it is the FPL who should be counted when measuring accurately the size and capabilities of the present work force. Before August 1981, FPL Controllers made up 80 percent of the workforce; today they comprise at most 68 percent of it. In 1981, there were more than 13,000 FPLs; today there are less than 9,500. This, we believe, is unacceptable, in view of the fact that since 1978 air traffic has increased by 60 percent. Furthermore, the FAA projects that air traffic between 1985 and 1997 will grow at a rate of 7 to 10 percent a year—an estimate which we feel is conservative.

There are a number of reasons why we do not have now the FPLs we so desperately need. Basically, the FAA could not turn out new FPL Controllers in the assembly-line fashion it had envisaged. There was a high washout rate at the FAA Academy; miscalculation of the time needed to become an FPL; enormous strain placed on the experienced Controllers who help train potential FPLs; neophyte Controllers being rushed into positions of responsibility that exceeded their capabilities;

unrealistic training demands; forced and excessive overtime; and low morale. These problems have existed ever since 1981; they exist today.

Rather than addressing the inadequate number of FPL Controllers at many major facilities by asking for a reinstitution of flight restrictions, the FAA simply changed terminology. The so-called Operational Controller was created. He or she could be any of a number of Controllers with different levels of training. Rookies and seasoned veterans were lumped together into one category to give the appearance that current staffing was adequate to handle air traffic demand. Last June, Rep. Gary Ackerman of New York stated that the FAA was apparently following the philosophy of changing definitions when it could not reach its goals. NATCA could not agree more; the FAA was playing a semantics game.

At the same time the FAA adopted a philosophy of "We Can Do More With Less Because Of New Technology." So far the FAA's new equipment has been a wash. It appears that millions of dollars are being pumped into hardware for which no software currently exists, and current budgetary plans of the FAA provide no indication that these software problems will be remedied in the near future. NATCA testified about these problems last November at a hearing this subcommittee held at O'Hare Airport. At O'Hare, such integral equipment as the Flight Data Entry Printout, the Automated Radar Terminal System A, and the Sensor Surveillance Radar is rendered virtually useless by a lack of operationally-effective software. There are similar problems with the HOST computer which was scheduled for implementation in 1987 and but which now has been rescheduled for possibly 1997.

At O'Hare and many other high density facilities, Controllers are using the same technology they used 15 years ago. However, the flight rate is clearly not what it was in 1972. At a facility like O'Hare there is a steady stream of aircraft, with two or three planes landing or departing every minute. The FAA may be doing more with less but it has nothing to do with technology. It has to do with dedicated men and women working excessive overtime and six day work weeks.

This is not the sign of a rebuilt system. But more disturbing are the FAA's ambitious future plans which are based on totally unproven automation. an article from the Septemer 22, 1986 Federal Times, which we request be included in the hearing record, gives a preview of what the FAA has in store for the aviation community and flying public. It includes reduced air separation, highly automated controlled functions, no increase in the number of airports, closely spaced paralled runways, shorter runways, and other items. There is every indication that equipment will be brought on with inadequate advance testing. And, if past software performance is any indication, we all could be in deep trouble.

What are our options given all these conditions? We would begin by urging the White House to comply fully with the provisions of the 1987 Continuing Resolution which was signed into Public Law 99-591 on October 18, 1986. Title V contains the language of S. 2417, the Aviation Safety Commission, which was sponsored by Majority Leader Robert Byrd and co-sponsored by many of the Members on this committee. Unfortunately, not a single person has yet been appointed to the seven member blue-ribbon commission.

A little more than two weeks ago, Majority Leader Byrd stated on the Senate floor that it is imperative that the Administration move quickly on the proposal. He gave two reasons: First, the work of the Commission will be important to the Congress as it prepares to reauthorize the airport and airway trust fund and consider new funding levels for FAA operations. Second, and most important, according to Senator Byrd, the quicker we know what the faults of the system are, the quicker we can act to avoid further tragedy. We agree with Sentor Byrd one hundred percent, and we have consistently supported the formation of this Commission.

NATCA believes that the work of the Commission could be invaluable to not only the work of this subcommittee but the entire debate on air traffic safety. It would be unique in that its charter permits it to examine the entire aviation system rather than just pieces of it. Since the Commission has only a nine-month existence, NATCA urges this subcommittee to do everything within its powers to get the Aviation Safety Commission on track.

We also strongly recommend that this subcommittee take action to restore the reporting immunity provisions under which Air Traffic Controllers used to work. This recommendation, vitally important to Controllers and their morale throughout the system, could help improve air safety immediately.

Prior to 1980, the FAA usd the NASA Aviation Safety Reporting System to monitor and manage problems and potential problem areas. It encouraged those in the system to report even their own errors. This system should be restored to its pre-1980 status with immunity provisions intact. It should be noted that immunity would not cover cases of gross negligence, criminal offenses, or accidents.

The ATC System has experienced a series of shocks during the last five years. The FAA has: radically compressed the Controllers training program; forced Controllers to work 6-day weeks at many high density facilities; forced Controllers to spend more than the previously agreed safe term of 2 hours on busy positions; and, it has resectorized at enroute facilities, creating larger sectors which encounter more traffic than before. These sectors, in some cases, are so large that they do not afford the Controller the ability to have an adequate scan during busy periods.

As a result of these shocks, the Air Traffic Control System is under stress. In the face of this situation, it is more important than ever that Controllers feel willing to come forward and report problems in the system, even when they have resulted in a system's error. The need for improvements in the current reporting system is demonstrated by the fact that in 1985 when there were some 758 near miss reports filed, only 12 were reported by Air Traffic Controllers. The program ought to revert to its earlier tenor which was corrective rather then punitive. It is essential that Controllers, with their vital first-hand experience, be encouraged to provide factual and honest assessments of the system and any corrective measures needed.

Mr. Chairman, we have additional recommendations to improve the Air Traffic Control System such as using the Aviation Trust Fund to improve air safety and air operations—the goals for which it was intended—and not treating this fund as a convenient source of funds for the budget jugglers at OMB.

We also strongly recommend an increase in the number of Controllers and FPLs, a subject that is covered in my responses to the questions specifically posed to us by the Chairman in his letter of invitation.

It is to these questons that I would now like to turn, in the order that they appeared in the letter.

The first question concerned whether discharged Controllers should selectively be brought back on the job in order to increase the experience levels at critical ATC facilities.

During the past twelve months, rehire has been the most emotional issue NATCA has encountered. Depending on the facility, there was either loud condemnation of, or strong support for, the proposal. Therefore, as an association, NATCA has not taken a position on the subjet, principally because there does not seem to be a clear consensus among the Controllers.

NATCA was next asked to discuss how many additional Controllers and supervisors are needed to handle adequately today's record airline traffic situation. We believe that at least 3,000 additional Air Traffic Controllers are needed above the 12,500 that are currently on staff. Once again, it is important to distinguish between acutal Controllers who separate traffic and the Air Traffic Assistants who handle a number of support and clerical duties. The FAA lumps them all together and claims that is has a Controller workforce of 15,000. However, approximately 2,500 of these so-called Controllers do not separate air traffic. At the very least, we need to bring the number of working Controllers up to the 15,500 mark, which, while short of the 16,200 total Controllers we had in early 1981, should alleviate the excessive overtime problem at some of the busier facilities. NATCA also recommends that 80 percent of these Controllers be FPLs. The Administration's FY 88 Budget asks for a meager increase of 225 in the entire air traffic workforce. This come nowhere close to present and future air traffic demands.

Because of the time required to train a Controller properly, NATCA also suggest that air traffic be restricted to 1981 levels. We believe that a formula could be worked out so that as qualified Controllers are added to the workforce, air traffic could rise proportionately. NATCA sees nothing wrong in admitting that a mistake was made in lifting the original restrictions in 1983. Such restrictions, imposed now, could be a much needed signal to the industry and the American pubic that the FAA is committed to safety first.

NATCA has also been asked to comment on the recent proposal by the Air Transport Association which would seek to reinstitute the practice of stacking traffic above an airport. Under the proposal, aircraft would be allowed to depart from one destination even if weather or air traffic could force them to circle above their destination.

NATCA completely opposes any increase in airborne holding at this time. While we are sympathetic to the frustrations over departure delays expressed by the ATA and the American flying public, we believe that the Air Traffic System today is chaotic enough without adding this new complicated ingredient . . . an ingredient which could lead us closer to the ultimate tragedy.

Aircraft holding requires more personnel than we now have. Furthermore, the majority of our Controllers have never been trained to conduct lengthy holding operations. For all these reasons, the ATA's plan would be foolhardy and dangerous at this time. Of course, this ATA proposal could and should be reexamined once the Controller workforce is back up to a safe complement. But until that time, it would be prudent to restrict departures, unles a clear, route and landing spot can be assured. The proper, temporary solution, until system-wide improvementes are in place, in the one already recommended by the FAA—that the airlines should begin realistically scheduling their flights.

ATA has also proposed creating a federal corporation to run the FAA. While there is some ingenuity to the idea, NATCA is deeply conerned over its safety implications. For a number of years, the FAA has been attempting to walk a fine line between promoting aviation as an industry yet ensuring safety. NATCA previously testified that the FAA cannot be ruled by two masters—safety and promotion.

The same would apply to any replacement corporation, for eventually either safety or promotion would take a back seat, and it would probably be safety.

NATCA therefore cannot support any plan which would remove air traffic safety from strong government regulation and oversight. Air traffic safety is too important to be twisted by the business demands that a corporation could place upon it.

On this point, one need look no futher than the airline industry itself where in recent years there have been numerous instances reported of airlines cutting corners on aircraft maintenance.

NATCA has recommended, instead, at the Aviation Safety Commision hearing last year, that thought be given to setting up a separate agency within the Department of Transportation to monitor and enforce air safety regulations. All air traffic control, inspection and technical affairs would come under its jurisdiction. Such an arrangement has worked with other agencies. For example, the Maritime Administration, which is charged with promoting U.S.-flag shipping, does not police operating standards; the Coast Guard does. There is no reason why a similar arrangement cannot be made for commerical aviation. It would be long overdue and much needed.

Mr. Chairman, in closin, let me thank you for giving us the opportunity to testfiy. We look forward to working with you and the Subcommittee in the months and years ahead.

The bottom line—our mutual objective—is safety. Budgetary support and jobs and improved working conditions, such as immunity, are important tools to achieve air safety. They will help us toward the goal for which NATCA was formed—a better, safer air traffic system. We intend to keep that goal as our number one priority.

Unitl now, the system has survived through a lot of dedication, hard work, and extra hours. But in another sense, we have been just plain lucky that none of those 758 reported near mises in 1985, or none of those 828 reported near misses in 1986, resulted in disaster.

But luck or good fortune is not an ingredient that I want as an element to depend on in an Air Traffic Control System. The public ought to get the best system we can provide . . . not merely the best system that budget cutters want us to have.

At some point, if we do not improve the current system, the law of averages will turn against us. Rather than see that day come, we want to do everything we can to keep the odds on our side.

Thank you.

[Whereupon, at 12:20 p.m., the hearing was adjourned.]

ADDITIONAL ARTICLES, LETTERS, AND STATEMENTS

STATEMENT OF BRUCE B. HENRY, PRESIDENT, NATIONAL ASSOCIATION OF AIR TRAFFIC SPECIALISTS

Mr. Chairman and distinguished members of this Subcommittee, I am grateful that you have provided me with the opportunity to express my thoughts and opinions relative to Aviation Safety.

The Flight Service System is an integral part of the Air Traffic Control System. There are approximately 300 Flight Service Stations throughout the United States. The personnel who staff the Air Traffic Control System are divided into three options and are designated by the Office of Personnel Management as Series 2152. They are called: (1) Air Traffic Control Specialists (Station); (2) Air Traffic Control Specialists (Terminal); and (3) Air Traffic Control Specialists (Center).

This association is designated by the Secretary of Labor as the exclusive representative of all the bargaining unit members who are Air Traffic Control Specialists (Station), Series 2152. Additionally, all of these personnel are statutorily designated as Air Traffic Controllers (5 USC 2109).

The 94th Congress provided the leadership and the initiative to force the Federal Aviation Administration to modernize and update the obsolete and dilapidated Flight Service System. The FAA promised to start and proceed with modernization during the attendant hearings.

Indeed, FAA did proceed and requested annual appropriations to support and achieve that end. The road to achievement has been long, and fraught with hazards of every description and only now are we seeing fruition. The very first modernized station was commissioned on February 12, 1986. Through February 6, 1987, there are a total of twenty-five new stations and they are equipped with only Model I equipment. Model II is well over the horizon.

Basic guidance was provided to the FAA on January 30, 1985, in a letter from the Senate Committee on Appropriations (Subcommittee on Transportation) and signed by Chairman Andrews and Senator Chiles. One paragraph of that letter is quoted here:

"1. Model I equipment testing and installation should be expedited. The Committee expects FAA to meet its current schedule to install three systems in May, and to complete installation by November, 1986. Every effort must be made to commission Model I equipment in tandem with the commissioning of an automated facility. The Committee will not view favorably additional consolidations beyond FY 1985 unless Model I eqiupment is fully certified."

This association has always taken the position that the Modernization Program should adhere to the basic principle of "modernize first—then consolidate." This was also FAA's original postion, but as the program has progressed, the FAA's position has changed and has become increasingly vague to us.

We infer that the Andrews/Chiles guidance went unheeded by the FAA for, on April 3, 1985, the Administrator stated before the Seante Appropriations Committee the following, relative to flight service:

"The consolidation of existing facilities provides equal or better level of service to users with less cost to the taxpayer. Savings, as well as significant cost avoidance, can be achieved through consolidation *independent of any automation*. Existing facilities are equipped with Leased Service A equipment, and initially the consolidated facilities will use that same equipment until the installation of Model I automation." *(Italics added).*

The Senate Appropriations Committee, in its perseverance, addressed this matter in its Report 99-152, on the 1986 Transportation Appropriations Bill, as follows:

FLIGHT SERVICE STATIONS

"The Committee is informed that new, automated equipment for consolidated flight service stations was tested at FAA's Technical Center and installed at three locations earlier this year. This equipment, known as model I, awaits official certification after training and final testing. The Committee notified the FAA on January 30, 1985, that additional flight service station consolidations would not be approved until model I equpment was fully certified. Pending receipt of such notification, the Committee gives tentative approval of proposed fiscal year 1986 consolidations, but expects a report by December 1, 1985, on all guidance contained in the January 30, letter. At that time, the FAA should also report on any changes in its actual fiscal year 1985 consolidations or those previously planned for fiscal years 1986 and 1987, and any new facility consolidations proposed for fiscal year 1988."

The Flight Service System situation was considered to be of such importance that it was addressed in The Conference Report:

"The conferees continue to be concerned about both the adequacy and cost effectiveness of automated equipment for consolidated flight service station facilities. House Report 99-256 contains language requiring FAA to report on the relative cost, performance, availability, and eligibility for airport grant funds of commercial and government direct user access terminal (DUAT) systems. Until both the House and Senate Appropriations Committees have evaluated and approved FAA's reported DUAT comparison and selection process, the conferees direct that funding for development of the Model 2 automated flight service station be suspended.

"In addition, Senate Report 99-152 required certification of Model I equipment and a revised facility consolidation plan to be submitted by December 1, 1985. Until the Committees have received and reviewed these reports, the conferees continue to disapprove fiscal year 1986 consolidations." (Page H12142 Congressional Record #174 of 12-16-85).

FAA's letter of January 27, 1986, in compliance with the above report requirement, fails to certify Model I and it ignores the guidance set forth in the Senate letter of January 30, 1985, previously referred to—specifically:

"Every effort must be made to commission Model I equipment in tandem with the commissioning of an automated facility."

We regret that the FAA declined to comment on this item for it causes us to believe that FAA's intent now is to proceed with modernization in some cases using the same old equipment.

We understand that the FAA is now working on a new FSS consolidation schedule in response to budgetary limitations on leased services and permanent change of station expenditures. Also, we are told that about seventy Flight Service Stations are operating on a part-time basis. We believe this action is in violation of 49 USC 2224, which requires that equal or better service be provided to users.

For Flight Service, in FY 1987, the President requested a net decrease of $1,100,000; 740 positions and 369 full time equivalent positions below Fiscal Year 1986; a drastic cut of 20%-24%! The official justification follows:

"Management initiatives are expected to generate the following savings: a reduction of 740 positions, 369 FTE's and $12,915,000 is made due to the consolidation of existing FSS's into automated FSS's."

In disapproving this reduction, the House Appropriations Committee stated (House Report 99-704, page 30):

"The rationale presented by the FAA for the proposed reduction in flight service station staffing is based on productivity improvements to be achieved by the consolidation of existing flight service stations into automated facilities and on projections that flight services provided by the private sector would increase significantly. The Committee is not convinced that such savings will, in fact, be realized. The FAA has testified that no personnel savings have been achieved in the consolidation program and that the private sector is currently providing only 1.3 percent of all pre-flight services."

The Senate Appropriations Committee, in its deliberations, restored one-half of this budget reduction (Senate Report 99-423) or a total of 370 positions.

Subsequently, the Conferees split the difference with the result of a reduction of 185 positions for Fiscal Year 1987.

In our opinion, no amount of consolidation and automation in progress satisfactorily result in personnel decreases of this magnitude. Regardless of "management initiatives," we will see FSS part-timing on a wider and wider scale, with the attendant decreases in essential service to general aviation and to scheduled carriers. Safety is not a part-time function—only eternal vigilance on a full time basis is acceptable.

While the Federal Aviation Administration and the Administration are telling the Congress that all is well, and they can handle the Flight Service System with 740 fewer positions, they are telling the user an entirely different story in a publication entitled "United States Government Flight Information Publication—Airport/Facility Directory," published by the U.S. Department of Commerce, with input by the FAA.

Of significance are a few excerpts from that document:

TEMPORARY FSS CLOSURES/REDUCED HOURS

East Central U.S.— Due to personnel shortages, the Federal Aviation Administration has temporarily closed or reduced operating hours for an extended duration at the following Flight Service Stations:

Reduced Operating Hours:

Houghton, MI

North Central U.S.— Due to personnel shortages, the Federal Aviation Administration has temporarily closed or reduced operating hours for an extended duration at the following Flight Service Stations:

Reduced Operating Hours:

Chadron, NE
Chanute, KS
Dodge City, KS
Emporia, KS
Ottumwa, IA
Sidney, NE
Vichy, MO
Watertown, SD

Closed: Hill City, KS

South Central U.S.— Due to personnel shortages, the Federal Aviation Administration has temporarily closed or reduced operating hours for an extended duration at the following Flight Service Stations:

Reduced Operating Hours:

Abilene, TX
Alice, TX
Carlsbad, NM
Childress, TX
Dalhart, TX
Deming, NM
El Dorado, AR
Gage, OK
Harrison, AR
Hobart, OK
Lake Charles, LA
Las Vegas, NM
Lufkin, TX
Midland, TX
Mineral Wells, TX
Palacios, TX
Ponca City, OK
Truth or Consequences, NM
Tucumcari, NM
Wink, TX

Northwest U.S.—Due to personnel shortages, the Federal Aviation Administration has temporarily closed or reduced operating hours for an extended duration at the following Flight Service Stations:

Reduced Operating Hours:

Baker, OR
Rawlins, WY

Southwest U.S.—Due to personnel shortages, the Federal Aviation Administration has temporarily closed or reduced operating hours for an extended duration at the following Flight Service Stations:

Reduced Operating Hours:

Akron, CO
Blythe, CA
Crescent City, CA
Daggett, CA
Imperial, CA
Marysville, CA
Thermal, CA
Tonopah, NV
Ukiah, CA

Closed: Lovelock, NV
Montague, CA

With the consolidation program on the verge of implementation; with the installation of Model I equipment; with the relocation of hundreds of employees and their families; with a vast retraining program; and with proposed personnel reductions, we fail to see how the FAA can possibly comply with the provisions of 49 USC 2224, which requires "as good as or better than the service provided when the station was open . . . ".

We would be comfortable with the reduction if the positions were filed with full-performance-level (FPL) journeymen. Unfortunately, included in this number are facility chiefs, deputy facility chiefs, developmentals, clerical workers, and training assistants along with the FPL journeymen.

Mr. Chairman, we note that the General Accounting Office has conducted an extensive study of the air traffic control work force (GAO/RCED 86-121 of March, 1986). We regret that the General Accounting Office failed to address the Flight Service System work force, but, nevertheless, we found information in the study which must be highlighted. On page 20 of Appendix I, witness McClure stated:

"We also asked controllers about two air traffic control additional services[8] which can have a bearing on safety and which they provide pilots when they have time—responding to pilots' requests for traffic advisories and weather advisories. Even though a quarter of the controllers said they seldom, if ever, declined requests for traffic advisories, another third said they often did. About half said they seldom, if ever, declined weather advisory requests, but one in five said they often did."

Again, on page 101 of Appendix III, witness McClure cited the same footnote but changed the statistics for a different situation:

"Over 40 percent said they seldom, if ever, decline weather advisory requests, but one in four said they often do."

Mr. Chairman and members, we do not believe that aviation safety is a part-time job and we do not believe that any FAA safety employee on the ground should have the option of denying, for any reason, a request for essential safety information to a pilot in command regardless of any other assigned duties.

Since 20%-25% of these terminal and center specialists admit to the denial of such requests from pilots in command we have, on a routine basis, a major defect in the Air Traffic Control System! This contributes, we believe, to the statistic that 40%-50% of all aviation accidents are weather-related.

Providing essential elements of safety information to the pilot in command on an "if-you-have-time" basis is dangerous, and has no place in any safety organization.

Our own solution would be the integration of Flight Service into the system with its approximately 3,300 full-performance/level journeymen who are trained in weather interpretation and distribution, and are not burdened with conflicts of interest.

In order to provide a comparison of safety performance, the following chart provides information relative to fligt assists (when pilot, crew, and passengers are in jeopardy) or "saves" by Air Traffic Control Specialists over a time span of five years. Please note that percentages for Flight Service are very high when one considers that the system is only endowed with one-fifth of the total controller work force.

FLIGHT ASSISTS

Calendar year	Total	People on board	Flight service system	Terminals	Centers	Flight service system (percent)
1980	2,695	5,413	954	1,206	535	35.4
1981	1,933	3,654	867	777	289	44.8
1982	959	1,899	462	358	139	48.2
1983	1,005	2,323	459	406	140	45.7
1984	1,069	2,852	404	467	198	37.8

Source: Hearings records of the House Appropriations Subcommittee on Transportation.

Our members tell us that they are discouraged by facility chiefs from reporting "flight assists" because upon review, the journeymen participating may be cited for procedural errors during the "flight assist" evolution. We, accordingly, believe that the percentages cited above for Flight Service are understated.

During the past eighteen months, there has been a great deal of talk and rumor relative to the privatization of the Flight Service System. During that time, the

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[8] Air Traffic control additional services include various advisories that are provided to the extent possible contingent only upon the controllers capability to fit them into the performance of higher priority duties and on the basis of the limitations of the radar, volume of traffic, radio frequency congestion and controller workload. The controller has complete discretion in regards to providing these services.

FAA contracted for a study on the subject, which has now been completed. It is entitled, "Flight Service Station Privatization Study", dated June, 1985. It was prepared under contract for the FAA by Comsis Corporation, Gellman Research Associates, J. Tilghman Montgomery Associates, and EXP Associates. Under the "Executive Summary", the safety conclusions are quoted:

"All things considered—

"Some privatization is already underway with respect to weather briefings and flight planning. FAA should place no undue barriers before those who would supply FSS services on a user-fee basis.

"Full privatization is not feasible. Full privatization is not even desirable because the private sector is not likely to supply in-flight services on a for-profit basis at levels approaching the output of those services by FAA.

"Because privatization requires direct user payments for sevices, if private supply is the only source of such services, the safety of the aviation system will be materially degraded; this grows out of the fact that users' willingness (and ability) to pay is limited in both good and marginal weather.

"Were full privatization a practical possibility, the system would be less safe than at present. Any reduction or elimination of the availability of FSS services will adversely affect aviation safety."

We are well aware of the concerns of this Committee relative to the numbers of full-performance-level Air Traffic Controllers in the present system. In an effort to alleviate the problems which now exist, we offer the following discussion and recommendations which we believe, if implemented, will do much to distribute workload and improve safety in the entire air traffic service.

At the present time, the volume of instrument flight rule (IFR) aircraft is sometimes exceeding the capacity of the air Traffic Control (ATC) IFR System. Both terminal approach control and air route traffic control facilities, at times, must impose traffic restrictions because of their inability to handle the current demand on the system. Many aviation organizations which use the ATC System have requested that additional Air Traffic Control Specialists be employed by the Federal Aviation Administration. Most of the increase in air traffic personnel would be to provide more capacity to the IFR ATC System. Little consideration is being given to pilots who operate under visual flight rules (VFR). In fact, recommendations have been made to impose additional restrictions on VFR aircraft at same airports. Present federal budget restrictions are expected to additionally impact VFR operators. Unless some provisions are made to accommodate VFR operations, these pilots may operate outside the ATC System, i.e. not communicate with Air Traffic Controllers. Except in certain airspaces such as Positive Control Areas, Terminal Control Areas and Airport Traffic, VFR pilots are not required by regulations to advise ATC of their operation. Nevertheless, all pilots are encouraged to contact the ATC System to ensure additional safety in the air. This encouragement consists of additional services such as severe weather avoidance, traffic advisories on other aircraft, and radar navigational headings. Unfortunately, these additional services are only provided on a workload-permitting basis. The first priority of air route traffic control centers and control terminals is to provide separation between aircraft, primarily IFR aircraft.

The following recommendations could be implemented at a relatively low cost and would increase safety and efficiency in the national airspace system.

(1) Separation of special VFR aircraft.—Automated Flight Service Stations should be granted the authority to provide separation to special VFR aircraft within control zones that are not served by a terminal ATC facility located at the airport. This authority is presently allowed but on an extremely limited basis. It should be authorized in all control zones not served by a control terminal.

(2) Nonapproach control service should be authorized.—Automated Flight Service Stations should be allowed to provide limited nonradar approach control service in the same manner and under the same requirements and conditions as presently authorized for nonradar terminal facilities. Provision of this service by Flight Service Stations would allow the decommissioning of some air/ground communications facilities as some airports now have dual communications equipment to serve both the Flight Service Station and the IFR ATC facility.

(3) Traffic advisory service.—The present airport advisory service should be cancelled. However, traffic advisory should be substituted and provided by Automated Flight Service Stations at all airport locations where communications capability exists and no control terminal is in operation. Pilots would be encouraged to contact the Flight Service Station to receive traffic advisories.

(4) VFR not recommended.—At the present time, depending on present and forecasted weather conditions, VFR pilots are sometimes given the advisory "VFR flight

is not recommended". This service should be expanded. The FAA has been somewhat reluctant to promote this service because of possible legal liabilities. The prevention of aircraft accidents and the resulting loss of life should be of primary importance. The IFR ATC System accepts the responsibility of aircraft separation and similar responsibility should be accepted by FAA in providing service to VFR operations.

(5) *Radar.*—Radar should be remoted to Automated Flight Service Stations. Air Traffic Control radar in terminal radar facilities and in air route traffic control facilities should be remoted to all Automated Flight Service Stations. At one time, ATC radar was remoted to the Washington Flight Service Station which was co-located with the Washington en route center. The services provided by the Washington Flight Service Station through the use of radar greatly increased the safety of flight for not only the VFR general aviation pilot, but also provided increased safety to IFR operations. Remoted radar capability will allow specialists at Flight Service Stations to provide the following services:

(a) Radar vectors to VFR aircraft so that the pilots can navigate around severe weather. At the present time, IFR ATC facilities are too busy during these adverse weather conditions controlling IFR aircraft to provide any service to VFR aircraft.

(b) Traffic advisories to military aircraft operating on low altitude training routes. Both VFR general aviation pilots and military pilots operating on military training routes would benefit from the exchange of traffic and air safety would be increased.

(c) As in the case of severe weather avoidance mentioned in (5)(a) above, ATC facilities are too busy to provide traffic advisories. However, with radar available, Flight Service Stations could provide traffic information and radar navigation assistance to VFR aircraft. In addition, locating lost aircraft would be greatly facilitated through the use of radar. At the present time, Flight Service Stations handle more lost aircraft than either terminal or en route facilities.

(d) IFR ATC facilities provide standard IFR separation to VFR aircraft practicing instrument approach procedures. Because air route traffic control centers are sometimes responsible for providing this service, VFR pilots are frequently denied the right to practice these procedures even though Federal Aviation regulations require a certain amount of training to remain current. With radar available, Flight Service Stations could provide this service and relieve the ATC facility of this workload.

(e) Assist drug enforcement personnel in detecting unidentified aircraft which may be conducting unlawful operations. This again will relieve workload on other FAA facilities.

(f) At airports where radar coverage is available, provide radar services to pilots arriving and departing the airport. This would be identical to the services now provided by terminal personnel using radar repeaters or bright displays.

As you may know, Mr. Chairman, the House Committee on Public Works and Transportation has requested the General Accounting Office to examine vital issues relative to the Flight Service System. A copy of the letter of request of August 15, 1986, is attached for your information.

Thank you, Mr. Chairman.

STATEMENT OF JOHN F. PETERPAUL ON BEHALF OF THE INTERNATIONAL ASSOCIATION OF MACHINISTS AND AEROSPACE WORKERS, THE BROTHERHOOD OF RAILWAY, AIRLINE, AND STEAMSHIP CLERKS, THE FLIGHT ENGINEERS' INTERNATIONAL ASSOCIATION, AND THE TRANSPORT WORKERS UNION OF AMERICA

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE: My name is John F. Peterpaul. I am Vice President—Transportation, International Association of Machinists and Aerospace Workers ("IAMAW") and have held this elective position since December 1, 1973. I am addressing this Subcommittee on behalf of the IAMAW as well as the Brotherhood of Railway, Airline, and Steamship Clerks, the Flight Engineers' International Association, and the Transport Workers Union of America. As unions intimately involved in the daily function of the airline industry, we welcome this opportunity to state our position regarding the current degree of safety afforded by our nation's Air Traffic Control system ("ATC system").

The present reevaluation of the ATC system has taken on crucial importance due to the explosive growth of the airline industry since the enactment of the Airline Deregulation Act of 1978. According to the latest industry and FAA figures, the total number of airlines (including cargo, express mail and charter) jumped from 150 in 1978 to approximately 400 today. Of these, passenger carriers rose in number from 97 to 157. Last year, I informed the House Subcommittee on Monopolies and Commercial Law that one-third more planes are in service today than in the preregulation days. The number of hours flown by passenger airlines have increased 66% in the past seven years. Overall, the 1980's have seen a 10% increase in air traffic accounting for an additional 100 million passengers.

In the face of such staggering short term expansion, we must ask if the ATC system can safety and efficiently handle the radically increased demands placed upon it. Those who believe it can are quick to call 1986 the safest year in aviation history, with a record 6.2 million flights and no known fatalities on any large American carriers. Yet to make this claim is to ignore several, more troubling, facts. Incidents where two planes come dangerously close to each other in the air, called "near-midairs" by experts, have risen alarmingly from 311 in 1982 to 812 last year, when 35% of them involved commercial airlines. Critical near misses involving encounters of less than 500 feet between private aviation and commercial jet airlines have increased from under 100 incidents in 1981 to over 170 by 1985.

The difficulties encountered by the ATC system have occurred on the ground as well as in the air. 1986 saw ten more instances of "runway incursions" than the previous year. Runway incursions are defined as occurrences involving an aircraft, vehicle, person, object or procedure that impedes take off. Across the nation, flight delays have also greatly increased, with three times the normal number of delays at airports such as Dallas/Fort Worth and Miami.

Among those best qualified to evaluate the ATC system's performance, both on the ground and in the sky, are the pilots who depend upon it for their lives as well as their livelihoods. Significantly, they have added their voice to those questioning the ATC system's current level of performance. In a September, 1986 survey by the Air Line Pilots Association ("ALPA"), pilots named "midairs" as their greatest concern and 66% felt the problems with air traffic control are more important than the public realizes. ALPA's President, Captain Hank Duffy, places today's conditions in the proper context when he points out that "near midairs, runway incursions, delays—every indicator in the system says that we're hanging by our fingernails."

The most significant studies of the air traffic control problem trace its origins directly to the President's 1981 firings of over 11,000 striking Professional Air Traffic Control Organization ("PATCO") workers. The Flight Safety Foundation, a highly regarded independent aviation group, said last year that despite the Federal Aviation Administration's ("FAA") plan to quickly rebuild the controller work force, "the present system does not provide the same level of safety as before the August 1981 strike." The Foundation based its conclusion on a comparison between their evaluation of the ATC system safety done in January, 1982 and the March, 1986 Government Accounting Office ("GAO") report entitled "Serious Problems Concerning the Air Traffic Control Work Force." Characterized as a "serious indictment of the air traffic control system" by Representative Guy Molinari (R-N.Y.), the GAO report was based upon a survey of 5,500 controllers, supervisors and managers at twenty air route traffic centers and fifty-four towers in the United States. It illustrates clearly the many problems within the ATC system which undermine our efforts to maintain safety in the skies.

The report focuses special attention upon the system-wide problem of understaffing. 91% of the controllers, 86% of the supervisors, and 72% of the facility managers believe there are fewer full-performance level controllers (those certified to handle all duties at the station) than are needed. 69% of the controllers claim that their heavy workload adversely affects air safety. 78% of the supervisors believe that the traffic workload is having a negative impact on maintaining system safety. One-third of the managers reported their authorized controller staffing levels are inadequate. In the words of the report, "Controllers at many major facilities are being stretched too thin and over time the situation could impair their ability to continue to maintain the proper margin of safety."

Not only does the report find the present number of air controllers inadequate, but the degree of experience held by those employed since the PATCO strike is also questioned. Although in early 1986 the FAA met its goal of 12,500 controllers (versus 16,200 before the strike), full-performance level controllers constituted only 62% of the total as opposed to 89% in 1981. By 1987, the total number of controllers has risen to 14,700, but the total percentage of full-performance level controllers remains stagnant.

Such a low level of fully qualified personnel could pose a great threat to safety given a concurrent lessening of flight crew experience relative to a few years ago. According to the Future Aviation Professionals of America, the commercial pilot's average number of hours of experience flying a jetliner has been cut in half during the past three years. With 67% of the veteran pilots for major carriers set to retire by the year 2000, the years of training possessed by the veteran air controller takes on a heightened value.

The training given to novice controllers (termed "developmentals") was also subject to the GAO's close scrutiny. The controllers and supervisors surveyed "expressed concern about the skill level of developmental controllers and the amount and quality of training they receive." Half of those surveyed believed that the training given before their on-the-job training began was less than adequate and that on-the-job training instruction ranged from less than adequate to poor in its explanation of backup systems, emergency procedures, holding patterns and controlling traffic in bad weather. In addition, the GAO found that "some on-the-job training is provided by developmentals to other developmentals" and they "received comments from both new full-performance level controllers and developmentals stating that, because of their own limited experience, they were concerned about being required to train others."

Given the increased percentage of developmentals during the past half decade, the full weight of the system has fallen upon the shoulders of the full-performance level controllers and their veteran supervisors. With fewer controllers to manage our increasingly crowded skies, an inordinate amount of overtime must be logged by those sufficiently qualified just to keep the system going. For example, in fiscal 1985, controllers worked 908,000 hours of overtime, an increase of over 400,000 hours from Fiscal 1980. Ten of twenty centers account for 75% of the total overtime worked in the continental United States. This frenetic pace is having a strong influence upon the rate of attrition among veteran controllers. According to the GAO report, 84% of the controllers and 81% of the supervisors eligible to retire within two years said they would. The Flight Safety Foundation found this to be in marked contrast to their 1981 findings concerning those nearing retirement.

Declining employee morale is also having a strong influence upon the veteran controllers decisions to retire. 1300 of those surveyed by the GAO offered extra comments regarding management practices and 92% of those comments were negative. The employees voiced their dissatisfaction over poor management and an unresponsive FAA bureaucracy. Any possibility of a supervisor attempting to improve conditions is often frustrated by his need to spend 35% of his time working traffic, thereby hindering his ability to carry out his supervisory responsibilities.

In the face of the safety hazards posed by understaffing, inexperienced and poorly trained new controllers, and high attrition and low morale among the fully qualified, what has been the response of the FAA and the Department of Transportation ("DOT")?

One answer offered by Transportation Secretary Elizabeth Dole was to implement flow control procedures which prohibit airlines from sending planes aloft when their point of destination is "bound in" by foul weather. Though it keeps planes from having to circle airports under poor conditions, it inevitably has led to more delays and has actually increased the workload of the controllers. The GAO report cites many controllers who do not perceive flow control as the solution and describe it as inadequate.

A second answer offered, rather begrudgingly, by the FAA and the DOT has been to propose the hiring and training of 1000 new air traffic controllers by 1987. GAO audit manager Joseph McGrail has stated that the FAA will meet its staffing goals only by counting students at their training academy, trainees, and assistants who perform mostly clerical tasks. Testifying last March before the Senate Republican Task Force on Air Transportation Safety, both the GAO and aviation groups doubted that the Secretary's hiring goal could be reached. Given the FAA's past overly optimistic estimates concerning controller candidates (35% FAA expected attrition rate versus 50% actual), these doubts appear to be well founded.

A certain degree of skepticism should also be maintained with regard to the FAA's renewed effort to achieve its goal of 75% full-performance level controllers throughout the system. In the past five years, the FAA has yet to achieve this percentage at any of its twenty Air Route Traffic Control Centers or at twenty-two major terminals.

The unions I represent agree that the immediate hiring of additional air traffic controllers and the establishment of a minimum standard of 75% full-performance level controllers are indeed the best measures for addressing our current air traffic control problems. However, the FAA and the DOT choose to ignore a crucial point highlighted recently by Representative Molinari. According to Congressman Molinari, a member of the House Subcommittee on Aviation, "There is only one source where the FAA can obtain trained, experienced controllers with proven records who can return to the job almost immediately and that is the former controllers." Equally to the point is Representative Bob Carr of Michigan: "The FAA is going to have to hire some of the PATCO people back. I think most members of Congress know that we have a deficiency and they don't see the point of cutting off our nose to spite our face when the safety of the flying public is at stake."

As the FAA continues to set unrealistic goals for producing replacement controllers, its failure to rebuild the ATC system places the American public needlessly in danger. Despite the ever-increasing costs to air flight safety, the FAA refuses to employ the former ATC strikers whose retraining, according to Congressman Molinari, would take only two months. This is in sharp contrast to the three to four years needed to fully train a new developmental controller. It is harder and harder to justify not tapping into this resource as we watch the number of near-midairs and runway incursions mount throughout our overtaxed system.

In its refusal to rehire any of the estimated 4000-5000 former PATCO workers who would like to return to work, the FAA and the Reagan Administration base their position upon the upholding of a principle as well as a fear of morale problems. Despite the Administration's assertion that federal employees who struck should not be rehired, the Defense Department has already set a precedent by employing former PATCO workers over the past six years. The last six years has also seen the quiet return to the ATC system, through legal appeals, of over 500 former controllers. In these cases, the FAA's opposition to rehiring based upon the alleged hostility between the old and the new controllers have proved goundless. In fact, the GAO survey found that the majority of current controllers and supervisors at the busiest traffic centers have no objection to the proposed hiring.

Finally, the Administration, by releasing some of the 3 billion dollars kept in the Airport and Airway Trust and using it to rehire the experienced and qualified former controllers, could draw to a close a sad chapter in U.S. aviation history. Though the President insisted in firing the PATCO strikers in 1981, his then Secretary of Transportation, Drew Lewis, was forced to admit that the controllers had "legitimate grievances" and that the FAA was probably "a bad boss to work for." For their actions, the strikers have paid a terrible price. According to studies conducted by Drexel University sociologist Arthur Shostak, they have paid dearly, as is evidenced by their high rate of suicide, divorce, substance abuse, nervous breakdowns, and downward job skidding. The fired controllers have been largely ostracized for six years now and many among them need work as much as we need the expert services they could perform.

Though its opponents may dismiss the humanitarian as well as practical reasoning behind our proposal, the present level of strain placed upon the ATC system promises to only increase in the future if controller rehirings do not take place soon. Given the airlines' constant demand for more air routes and the ever expanding growth in air traffic since deregulation, the GAO report concludes that "the controller workload will likely continue to be a concern for some time." The FAA expects air traffic to almost double before the year 2000, from 279 billion passenger miles today to 478.6 billion by 1997. By then, they also expect to have completed their $12 billion plan to greatly automate the ATC system. Even if we assume this project is completed on time, what is to be done during the intervening years as conditions such as understaffing and inadequate training continue to lead to a greater and greater number of airline accidents?

It is clear to us, as I hope it is to this Subcommittee, that the FAA must rehire the air traffic controllers necessary to ensure the safety to the airline passengers of today and tomorrow. According to figures published recently in the New York Times, 232 people have died since 1981 in accidents involving controller mistakes or inexperience. We must not allow tragedies such as these to continue to occur while we have the means to stop them right within our grasp. Thank you.

STATEMENT OF DON APLIN AND TOM DEVINE, GOVERNMENT ACCOUNTABILITY PROJECT

I. INTRODUCTION

The Government Accountability Project (GAP) commends the Subcommittee for promptly renewing its oversight of aviation safety, and is grateful for this opportunity to provide a statement for the hearing record on the important issue of mid air collision avoidance. Our analysis reflects the input of our client James Pope, formerly the FAA's Ombudsman for General Aviation, as well as from other representatives of the engineering, commercial pilot and air traffic controller professions who have developed expertise on mid air collision avoidance systems.

We are relieved that Congress and the Federal Aviation Administration (FAA) have raised this critical issue to a position of primary importance, but regret that the agency's bureaucratic inertia prevailed until the sacrifice of hundreds of innocent lives, most recently in Cerritos and Salt Lake City. The most serious challenge lies ahead—selecting a corrective action program that represents a systematic, reliable solution where it is most needed. GAP's central concern is that in the current rush to provide on-board collision avoidance capability the FAA is promoting an unreliable and at best incomplete solution with its Traffic Collision Alert System (TCAS) program—one that will only cover a small fraction of aircraft and be unavailable when it is needed most.

Although GAP, like Congress, does not have the expertise or resources needed to fully evaluate the highly technical aspects of the proposed TCAS systems, we are well qualified to comment on the FAA's systematic failure to develop and consider alternative technologies to their TCAS design. And through our extensive investigation, document review and consultation with independent avionics experts over the last six years we have developed a fundamental understanding of the flaws in the TCAS program.

The central body of this statement is divided into two main sections: an analysis of the shortcomings of TCAS, and the presentation of ACAS as a viable alternative. TCAS is critiqued in terms of its technical and coverage inadequacies, prohibitvely high cost to users, and continuing unavailability. ACAS is then shown to be a viable and superior alternative when subjected to the same standards.

Hopefully the remaining flaws in the TCAS system can be corrected in time for this expensive and compulsory equipment to become a constructive air safety improvement. But Congress should be aware that inherently TCAS cannot serve as a complete solution to preventing avoidable mid air collisions. Congress should be concerned that the FAA continues to cling to a policy of prohibiting voluntary uses of proven, reliable and inexpensive alternatives such as ACAS to complement the holes in TCAS's coverage. The problem of mid air collisions is too serious to withhold any reasonable options from full public debate and good faith technical review.

II. GAP'S INVOLVEMENT IN MID AIR COLLISION AVOIDANCE

GAP is a non-profit, non-partisan, public interest law firm dedicated to helping whistleblowers. GAP has been concerned with the issue of mid air collision avoidance for six year as a result of our decision to sponsor the "whistleblowing" dissent of Mr. Pope. Mr. Pope alleges that the FAA has mismanaged its collision avoidance program by failing since 1975 to approve a privately developed, inexpensive, effective and available Airborne Collision Avoidance System (ACAS) in favor of continuing its own research and development program into a technically flawed, grossly expensive, and as yet unavailable system known now as TCAS.

Mr. Pope came to GAP after suffering retaliation for his internal dissent concerning the FAA's handling of its collision avoidance program. Mr. Pope's comments supporting ACAS and questioning the advisability of the FAA's in-house program resulted in his transfer from a management position in the Washington, D.C. headquarters of FAA to a make-work position in Seattle, Washington. In short, Mr. Pope's attempts to provide healthy internal debate on a matter of vital importance were met with hostility and a total unwillingness to tolerate internal dissent.

Mr. Pope filed a whistleblowing disclosure with the Office of the Special Counsel (OSC) of the Merit Systems Protection Board, in June of 1985, charging that FAA had violated the law, mismanaged its collision avoidance program and caused substantial and specific danger to public health and safety. OSC agreed that there was a "substantial likelihood" that Mr. Pope's allegations were correct and ordered the Department of Transportation (DOT) to investigate the charges.

During the investigation the DOT declined to interview critics of the TCAS program and ignored available vital information on the issues presented for review. In addition DOT failed to address several aspects of the issues transmitted to them by OSC, and substantially altered the context of the questions it did address.

DOT used pre-existing, outdated, documentation, rather than a formal investigation, to reach what appeared to be a predetermined conclusion that Mr. Pope's allegations were without merit. Indeed, OSC returned the FAA's first version of the report for further work, due to serious issues that have been omitted entirely.

Through our investigation and fact gathering efforts over the last six years, including an intensive verification study to determine if Mr. Pope qualified for our assistance, we have confirmed the substance of his allegations and have concluded that they are substantially correct. Because of our conclusions we feel obligated to submit to the Subcommittee the following statement outlining briefly our analysis of the TCAS debate for inclusion in the hearing record.

III. THE NEED TO STUDY PROVEN ALTERNATIVES

It is clear that the FAA is not open to internal debate on alternatives to TCAS. Even after the tragic Cerritos mid air, the FAA did not volunteer any information about the relevance of alternative technologies in reaching a solution to the mid air collision problem.

It has been almost twelve years since the FAA has seriously considered any alternatives to its own TCAS concept as a possible solution to the problem of mid air collision. And that effort only occurred because the Agency was ordered by Congress to study the ACAS and other options. Despite FAA findings that one ACAS system met all agency objectives for a collision avoidance system, the FAA rejected the system and instead concentrated on its own design.

The FAA claims that it must choose among competing systems at some point in order to effectively reach any solution. In general that philosopy makes good sense, but only when there has been true competition allowed and only when the decision-makers based their decisions on the technical merit of the facts for each option. The decision to reject ACAS was a predetermined one. The American flying public is today still paying the price for the FAA's bureaucratic philosophy of rejecting safety systems not invented within the agency.

When questioned about the failure to consider alternatives to TCAS the FAA admits that once it made the decision to pursue BCAS, which later grew into TCAS, the door was closed to further discussion. Twelve years later the FAA has not presented a viable working system for collision avoidance. ACAS remains a very real alternative.

The TCAS program proposed by the FAA does not anticipate providing effective coverage to general aviation. The FAA claims not to discourage reasonable alternatives which could provide the desperately needed protection for those aircraft. But there have been no efforts to reconsider earlier rejections which were based on technologically arbitrary grounds, nor has the agency taken any outreach steps to encourage alternatives. The FAA has de factor made clear that it does not seriously desire to provide protection to general aviation which comprises over 95% of the national air fleet.

The FAA must be forced to consider proven alternatives in the face of the reality that TCAS has yet to emerge as a viable collision avoidance system. It is the only way to ensure that the best possible and most reasonable protection is achieved. The argument for reexamining ACAS and any other alternative is not a radical one, but only a plea to return to basic common sense.

IV. ANALYSIS OF TCAS

A. TCAS can not provide effective protection against mid air collisions:

1. TCAS I leaves general aviation aircraft unprotected because it does not provide collision avoidance commands.—TCAS I is essentially a proximity warning indicator (PWI), abandoned as technologically inadequate over a decade ago. Without collision avoidance commands TCAS I does not meet the FAA's own requirements for an effective collision avoidance system.

Any effective collision avoidance system must provide avoidance commands. PWI technology is for all practical purposes a dark ages concept unsuitable for modern day application as a collision avoidance system, yet the FAA contends that TCAS I could provide protection for the general aviation community.

General aviation aircraft represent over 95% of the planes flying in the U.S.. TCAS I will leave those 95% unprotected.

2. TCAS II gives only marginal protection to airliners because it does not provide complementary avoidance commands.—Any effective collision avoidance system must provide complementary avoidance commands to all of the aircraft involved in an accident. TCAS II does not provide such complementary commands.

The FAA contends that TCAS II is a desirable solution because it can be effective as soon as it is installed on the first aircraft. However, a TCAS equipped plane involved in an incident with a non equipped plane is provided with only marginal protection. Furthermore, the FAA has set to protect even one plane 12 years after claiming that TCAS was a more desirable option because it could provide "immediate" protection.

Although the TCAS plane will receive an appropriate avoidance command, the unequipped plane will not. What is to prevent the unequipped plane from choosing a flight path which brings it directly into the path chosen by TCAS? A one sided TCAS II avoidance command cannot anticipate the ad hoc decisions by the other pilot, who is not receiving those instructions. Unless both planes are given commands which complement each other (drive to one, climb to the other) the pilot of the one equipped plane runs the risk of relying on an avoidance command which would place his aircraft in further danger. Through computer modeling the FAA claims to have shown that the risk of such a problem is small, but there is still a very real chance that such unanticipated collisions will occur.

Pilots are especially vulnerable to this danger when they are faced with inclumate weather conditions and are relying solely on their instruments to fly. In short, in the very situation in which a pilot most needs accurate information he or she may be unable to trust the TCAS commands.

3. *TCAS II is ineffective in high density areas where collision avodiance is needed most.*—Interference problems with TCAS make its use in high density areas impossible. Because of these problems TCAS will not function in the very environment where collision avoidance backup protection is needed most. In short, TCAS must be shut off at the very moment it becomes most needed.

B. The high cost of TCAS is unacceptable and precludes voluntary implementation:

1. The cost of TCAS I places it well above the easy grasp of the general aviation user community.—Current FAA estimates palce the cost of TCAS I at nearly $10,000 per aircraft. It is highly unlikely that the General Aviation community will be able or willing to expend that amount of money for a PWI that will still leave them unprotected. ACAS was and still is estimated by experts to cost under $1,000 per aircraft.

The FAA admits that the high cost of TCAS I basically precludes its implementation on most general aviation aircraft. In short TCAS I is a mere paper solution with no reasonable probability of providing any protection.

2. The cost of TCAS II is unnecessarily high.—Current FAA estimates place the cost of TCAS II at nearly $100,000 per aircraft. It comes as no surprise that the FAA has now announced it will mandate the systems use. Once again it is highly unlikely that the airline industry would voluntarily implement a system which is both technically flawed and enormousy expensive. Now the airlines will not even have an opportunity to choose.

C. TCAS as of yet is still unavailable to the users:

1. There are no current plans for the implementation of TCAS I.—Although the FAA contends that TCAS I will provide mid air collision protection for General Aviation, it has no current plans to faciliate the implementation of its system.

At present the FAA has merely certified a TCAS I design and then withdrawn from the responsibility for providing effective collision protection for general aviation aircraft. There is simply no TCASI hardware available because potential manufacturers realize the ludicrousness of the system.

The FAA has now embarked on a plan to mandate the use of altitude encoding transponders for general aviation aircraft. While a step in the right direction, this decision shows a lack of insight into the problem of mid air collision avoidance. In order for an avoidance system to provide effective protection it must be totally independent of the ground. The only reason to use a collision avoidance device is to catch and correct the errors made by controllers or to function in airspace which is uncontrolled. Altitude encoding transponders do not fully meet the need for effective protection of general aviation aircraft.

2. TCAS II will only be available in limited quantity by 1990.—Before the Cerritos mid air, the FAA projected that TCAS II would be available for limited installation in 1990. Just last month the agency announced it will mandate TCAS II by late 1988 or early 1989. However, there have been no FAA estimates as to when the system will be widely available, or effective. Once again the FAA is offering predictions for a paper solution, but cannot provide an answer as to when real protection will be available.

In this regard the FAA has a history of unrealistically optimistic predictions about its planned collision avoidance systems. In 1975 the FAA predicted that a system would be in palce by 1980; in 1981 Administrator Helms predicted TCAS would be in place by 1983. It is likely that the airline industry will still be waiting for protection to arrive in 1990.

V. ACAS IS A VIABLE ALTERNATIVE

A. The FAA admits that ACAS met all the objectives of the agency:

In December 1975, after a four year—12 million dollar study, the FAA concluded in its #75-E7 Report that ACAS met "all the objectives of the agency, "for a collision avoidance device. Yet the agency rejected the ACAS option on non-technical grounds-the threat its success would prose the FAA's own competing research and development plans.

Since 1975, technological advances in memory storage and retrieval have enhanced the capability of ACAS. the FAA has not reconsidered ACAS in light of these advances.

ACAS provides the necessary complementary avodiance commands for all equipped aircraft, both airliners and general aviation, and thereby provides fully effective protection from mid air collisions.

B. ACAS could provide full coverage at a minimal cost:

1. General aviation aircraft could be effectively equipped for less than one thousand dollars per aircraft.—Current estimates by experts in the field place the cost of a general aviation ACAS at well below $1,000/aircraft. The FAA's current proposal to mandate altitude encoding transponders for general aviation would cost the users at least as much and continue to leave those aircraft without effective collision avoidance protection. In order to be effective a collision avoidance system must be independent of the ground. The FAA's proposal will continue to subject general aviation to the possibility of the same kind of controller errors which allowed the Cerritos collision.

The general aviation user community has always expressed a desire for an effective and reaonably priced device to prevent mid air collisions. ACAS provides that device, and could be widely implemented on a voluntary basis because it meets the price and effectiveness requriements of the user community. Contrary to FAA assertions the agency has never presented ACAS to the user community as a viable option for preventing mid air collisions.

3. Airline industry users could be effectively equipped at a cost of less than five thousand dollars per aircraft.— Current estimates by experts in the field place the cost of an airliner ACAS model at less than $5,000/aircraft.

Airline carriers and the insurance companies which provide liability insurance would with all likelihood quickly and voluntarily insure that implementation of an effective and inexpensive collision avoidance system would take place.

The cost of ACAS, relative to the cost of obtaining and operating a commercial aircraft, is so low that its implementation is for all practical purposes guaranteed. No FAA mandate would be necessary to insure airline compliance.

C. ACAS is still an available alternative which could begin providing effective protection within a year of its approval:

Experts estimate that within eight months of its approval by FAA, ACAS could be ready for production. By the end of two years after its approval, over 80% of all aircraft flying could be equipped. By the end of a third year all aircraft could be equipped and effectively protected.

VI. CONCLUSION

The high cost, continuing unavailability, and technical problems of TCAS are all red flas which should place the FAA's unrelenting promotion of TCAS in question.

Given the low cost, almost immediate availability, and technical superiority of ACAS, it is unreasonable for the FAA to continue its research and development program exclusively on TCAS.

At the minimum FAA should reopen the record on ACAS so that it may responsably re-evaluate ACAS in light of technical advances over the past ten years. TCAS will not provide any effective protection from mid air collisions until well after 1990, if at all. While we continue to await TCAS, there is no harm in considering proven, reasonable and viable alternatives as a solution.

To date the FAA has chosen to eliminate and then ignore ACAS. ACAS remains a vital and viable alternative to TCAS which demands serious consideration. the FAA's stated mission is to promote air saftey. By blindly pursuing TCAS the FAA has abdicated its mission on mid air collision avoidance for the vast majority of the national civil air fleet.

The wisdom of the age old homily waring against putting all one's eggs in one basket is aptly illustrated by the FAA's experience with TCAS. The American public should demand no less than that the FAA fulfill its mission on the issue of mid air collision avodiance by considering all of the alternatives presented for consideration.

By fulfilling its oversight functions Congress has the opportunity to ensure that the FAA will consder all of the reasonable and proven alternatives. If the FAA escapes informed scrutiny of its collision avoidance program, TCAS will continue to be forwarded as the one and only solution and the necessary opportunity to evaluate viable alternatives such as ACAS may become a moot point.

The FAA's refusal since 1975 to seriously consider alternatiives to its own TCAS design may well leave the American flying public with an unacceptable solution in place which fosters the illusion of safety, but provides only minimal protection.

Statement of James C. Hankla, Chief Administrative Officer, County of Los Angeles

The longstanding concern of the Aviation Subcommittee for maximizing air safety has been given fresh urgency by the August 31, 1986 midair tragedy over the City of Cerritos in Los Angeles County in which 82 lives were lost, 15 on the ground. The County of Los Angeles shares this concern.

Los Angeles County's crowded skies carry nearly one-third of the nation's air traffic. Los Angeles International Airport alone, the third busiest airport in the world, handles over 546,000 flights annually while accommodating more than 38 million passengers. Thirteen additional public-use airports within the County add to airspace congestion.

Nationally, the deregulation of the airline industry brought increased industry growth including the commuter and regional airline segments. This growth has put greater demands on the Air Traffic Control System. It has also signaled the need for significant improvements in the system in order to satisfy the requirements for public safety and efficient air travel.

In response to these factors the Los Angeles County Board of Supervisors has acted within its authority to, among other things: Conduct its own public hearing on September 16, 1986 on air safety; Intensify programs on airspace safety information at the five County-owned general aviation airports; and

Convene a multi-agency Disaster Services Evaluation Task Force to review response procedures to major air-to-ground incidents.

Los Angeles County's direct authority to implement other air traffic and aircraft safety measures is, of course, preempted by the Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB). The NTBS conducted technical hearings on the Cerritos tragedy in Los Angeles County during the week of December 1-5, 1986.

On December 5, 1986 Senator Pete Wilson chaired a hearing in Los Angeles County on air safety at which testimony was provided by representatives from the Federal Aviation Administration and associations of airlines, aircraft owners and pilots, and residents of Cerritos.

The Los Angeles County Board of Supervisors by unanimous vote has adopted recommendations to be presented to the FAA, the NTSB and other entities relative to airspace and airport safety. These recommendations are as follows:

CONTROLLED AIRSPACE ISSUES

(1) Provide design simplification and expansion of the Terminal Control Area (TCA) at Los Angeles International Airport (LAX) and, as necessary, at other primary airports nationwide. Also review the Airport Radar Service Areas (ARSA) at secondary airports in the Los Angeles County area.

(2) Urge the FAA to maintain its current high degree of vigilance for tracking and apprehending TCA violators at LAX.

(3) Increase the first time penalty for TCA violations to suspension for up to one year, depending upon seriousness, and require the pilot to pass an FAA written test on controlled airspace before suspension is lifted. Additional violations should lead to revocation and, and under willful circumstances, criminal prosecution.

(4) Urge the FAA to evaluate pilot training programs and education information methods to stress controlled airspace awareness.

EQUIPMENT ISSUES

(1) Provide that all aircraft have altitude reporting transponders (Mode C capability) except if otherwise exempted by the FAA. This equipment should be automatically activated. [This proposal includes support for the Air Transport Association's proposal pending before the FAA to require automatic altitude reporting transponders in specified controlled airspace.]

(2) Urge the FAA to move forward as rapidly as possible to complete evaluation and implementation of an "on board" Threat Alert and Collision Avoidance System (TCAS).

(3) Urge the FAA to provide updated equipment at airports in Los Angeles County including control towers at Compton and Whiteman Airports and "D" Bright Radar at these locations as well as at El Monte Airport and Fox Airfield.

FUNDING ISSUE

Free-up the Federal Airport and Airway Trust Fund balance for the purpose for which it was intended: the investigation and funding of air safety improvements.

Los Angeles County believes that action on these and other sensible air safety measures must be taken as soon as possible.

We wish to thank Chairman Ford, the entire subcommittee and all of the hearing participants for their awareness of the need to move forward on measures to ensure safe skies.

CONTROLLED AIRSPACE ISSUES

(1) Support design simplification and expansion of the Terminal Control Area (TCA) at Los Angeles International Airport (LAX) and, as necessary, at other primary airports nationwide. Also review the Airport Radar Service Areas (ARSA) at secondary airports in the Los Angeles County area:

The TCA configuration for LAX is a complicated dedication of airspace which radiates from the facility horizontally and vertically not unlike an upside down, tiered wedding cake skewed toward the flight path. Each airspace layer or zone in the structure, however, may have wedges of non-TCA airspace intruding into the zone or a TCA wedge eminating from it. One such wedge, eminating from the TCA over Cerritos, was the mid-air impact area of the August 31, 1986 collision of a commercial airliner and general aviation aircraft.

A reconfigured TCA should be less complex and, if practical, possess a simplified geometric design and conform as many vertical airspace "layers" as possible to this design. It should have sufficiently expanded boundaries, consistent with providing a safety "cushion", to minimize potential contact from aircraft inadvertently intruding into the TCA and be "anchored" by landmarks easily identifiable under visual flight conditions.

The less complex but still mixed and busy ARSA controlled airspace at, among other places, Burbank and Ontario Airports (as well as Norton, El Toro and March Air Force Bases) should also be reevaluated following appropriate safety criteria and regional considerations.

NOTE.—The FAA Western Region is currently studying possible simplification of the LAX TCA. In Washington, the FAA's Office of Aviation Safety is investigating national design criteria for all TCA's.

(2) Urge the FAA to maintain its current high degree of vigilance for tracking and apprehending TCA violators at LAX:

Following the Cerritos incident the FAA has temporarily enhanced its program for locating and tracking TCA intruder aircraft by reassigning existing resources. The FAA Western Region reports a dramatic increase in the apprehension of violators because of this program.

In order to maintain this program and the safety benefits this increased vigilance provides, additional personnel and perhaps equipment will be required.

(3) Increase the first time penalty for TCA violations to suspension for up to one year, depending on seriousness, and require the pilot to pass an FAA written test on controlled airspace before the suspension is lifted. Additional violations should lead to license revocation and, under willful circumstances, possible criminal prosecution:

The FAA is currently studying a proposal from their Office of Aviation Safety to set a minimum of 60 days suspension for a TCA violation. While a minimum penalty is needed, increasing the possible maximum penalty for a serious violation, as well as graduated penalties for multiple violations or especially blatant behavior, needs to be addressed.

(4) Urge the FAA to evaluate pilot training programs and educational methods to stress controlled airspace awareness:

The FAA requires extensive flight training prior to certification as well as Biennial Flight Reviews (BFR's) after certification. Education materials are continually available.

Instruction in the flight training and BFR programs should be evaluated to stress TCA and ARSA controlled airspace. Additional ongoing educational materials as well as an "outreach" programs may also be necessary in this area.

EQUIPMENT ISSUES

(1) Provide that all aircraft have altitude reporting transponders (Mode C capability) except if otherwise exempted by the FAA. This equipment should be automatically activated. [This proposal, therefore, includes support for the Air Transport Association's (ATA) proposal pending before the FAA to require automatic altitude reporting transponders in specified controlled airspace]:

The nation's airspace continues to become increasingly complex, mixed and crowded. Virtually all population centers have TCA and ARSA controlled airspace. There is also a vast network of controlled airspace corridors which are used as aircraft flight routes between cities and which radiate from "hub" airports throughout the country. The use of this airspace has increased dramatically over the last few years.

Under this proposal Mode C transponders would be required for all aircraft. Exemptions may be granted by the FAA for agricultural aircraft, where all flights will be clearly limited to non-controlled airspace or in other specified circumstances. Also the ATA's proposal for rulemaking (Docket #24953 Point #1), to require Mode C capability in aircraft using controlled airspace including TCA, ARSA and flight routes above 4,000 feet, is to be supported under this proposal.

NOTE.—Not only is Mode C vital for helping air traffic controllers pinpoint aircraft location but it is a vital component to any Threat Alert and Collision Avoidance System (TCAS) currently being studied.

Many general aviation aircraft already have Mode C. For the remaining aircraft, enhancement of a transponder to Mode C is expected to cost approximately $400–$700 installed. This is a fraction of the expenditure for aircraft purchase, fuel, maintenance and monthly airport tie-down fees.

Finally, the FAA reports that any additional volume of Mode C transponder signals from aircraft bordering a TCA or other controlled airspace would not pose a radar control problem. These potentially intrusive signals from outside the TCA may be masked from air controller scopes by reprogramming existing air terminal computer equipment.

(2) Urge the FAA to move forward as rapidly as possible to complete evaluation and implementation of an "on board" Threat Alert and Collision Avoidance System (TCAS):

TCAS I, II and III are currently under various degrees of technical study by the FAA with a 1988 target date for completion. This study is intended to resolve problems associated with triggering false alarms, eliminating unnecesary nusiance readings and perfecting engineering requirements, among other things.

Elements of this study are expected to focus on the need for Mode C transponders in order to identify "intruder" aircraft on the TCAS equipment as well as the possible use of satellites for maintaining air traffic control nationwide.

Final recommendations coming from this study for an effective TCAS system must be acted on quickly. TCAS needs to be kept on a fast track.

(3) Urge the FAA to provide updated equipment at airports in Los Angeles County including control towers at Compton and Whiteman Airports and "D" Bright Radar at these locations as well as Fox Airfield and El Monte Airport:

The Los Angeles Basin is a very heavily used airspace and the location for at least fourteen commercial and general aviation airports. It is critical to maintain air control equipment and procedures capable of maintaining safety in this airspace.

The Compton, Whiteman, El Monte and Fox Airfield Airports are county-owned and in need of "D" Bright Radar. Compton and Whiteman also need control towers.

NOTE.—"D" Bright Radar not only shows terrain features and aircraft to tower controllers but alpha numerics including altitude and aircraft identification.

This request to upgrade Los Angeles County facilities, though not necessarily linkd to concerns over a Cerritos-type commercial carrier involvement, is part of the overall airspace safety needs of the Los Angeles basin and is an FAA responsibility to implement.

FUNDING ISSUE

Release the federal Airport and Airway Trust Fund for the purpose for which it was intended: the investigation, development, and, as appropriate, the funding of air safety improvements:

As of August 31, 1986 this fund had an unearmarked balance of at least $3 billion in revenue from excise taxes on fuel, tires and tubes used on aircraft was well as surcharges on airline transportation. The fund continues to grow.

These funds should be released to increase grants-in-aid for airport and aircraft safety equipment, research engineering and development purposes, and other air safety related programs including the above recommendations.

STATEMENT OF THE NATIONAL BUSINESS AIRCRAFT ASSOCIATION, INC.

Mr. Chairman and Members of the Subcommittee: Thank you for allowing the National Business Aircraft Association, Inc., (NBAA) to submit this statement for the record of recent hearings on the subject of aviation safety. As you know, NBAA represents the aviation interests of American Business. The association now numbers approximately 2900 companies which own and operate aircraft as a means to meet their daily business transportation requirements. We congratulate the Subcommittee for taking the initiative of convening hearings on this most important issue and hope from them some insight on improving aviation's already excellent safety record will be gained.

Preliminary NTSB and FAA figures for 1986 show that corporate and business aviation, each subsets of general aviation, achieved one of the safest years on record. In the case of corporate aviation, aircraft flown for private companies by professional flightcrews, the safety record is directly comparable to that of scheduled domestic carriers operating large aircraft. Significantly, the entire fleet of general aviation aircraft completed its safest year on record. Consequently, we must point out that, in spite of "in-depth" magazine and television stories to the contrary, aviation continues to be a safe activity. For your reference, we have attached a chart showing the comparative safety records of business, corporate and commercial aviation.

Despite the fact that aviation safety is improving and 1986 was one of the best years on record, problems do exist. All of us with a stake in aviation must continue to work to ensure the safest operational environment possible.

Indeed, this Subcommittee and Congress as a whole has a unique responsibility to help guarantee the climate in which we may improve aviation safety in the coming months through timely enactment of a comprehensive, long-term measure to reauthorize the expiring Airport and Airway Improvement Act of 1982. Among the safety problems existing in the current system which can be addressed through the reauthorization process are airport congestion, inadequate numbers of full-performance level (FPL) air traffic controllers, inadequate or non-existent real-time weather information for airborne aircraft, too few precision approach equipment installations, and obsolete air traffic control equipment, such as computers, radars and communications gear.

The primary objective of this year's reauthorization must be to ensure safety through continued modernization of the National Airspace System. Realization of this goal would help secure the future growth, enhance the safety of and improve the contributions made by civil aviation, as an integral part of the economy, to the nations economic well-being. Since this goal can be met without use of general revenues, the benefit to the nation as a whole argue strongly in favor of reauthorization.

The expiring 1982 Act has worked relatively well, especially considering it represents the largest non-military Federal procurement program in history. However, legislation to reauthorize the 1982 Act should be designed to correct some serious faults that have been brought to light.

Foremost among these faults is lack of a mechanism to ensure that funds deposited into the Airport and Airway Trust Fund are expended in a timely manner. Some past underfunding of programs authorized by the 1982 Act can, in part, be blamed on design and procurement delays; however, arbitrary budget constraints which should be applicable only to programs funded from general revenues, have most seriously impaired progress. In addition, the vast majority of safety- and capacity-enhancement programs are now ready to move forward, increasing competition among them for the heretofore limited funds available.

The chief goal of the Subcommittee's efforts to improve aviation safety through reauthorization must be to resolve funding problems associated with subjecting deficit-proof, user-funded programs to a Federal budget process designed for general revenue expenditures. From such resolution will flow enhanced safety.

Thus, a change must be made in the manner the Federal government budgets for and allocates funds for the improvement of airports and air traffic control equipment. This one change, more than any other, would have the greatest long-term favorable impact on aviation safety as it would ensure those problems which exist and which can be addressed through the expenditure of funds are properly dealt with.

Otherwise, we will experience only further delays to these improvements, ultimately increasing costs to the Federal government and airspace users alike.

Once removed from the unified budget, user funds must then be spent in a rational, orderly manner calculated to have the most beneficial impact on safety. Full funding of the projects listed in the "brown book" is essential to meet safety requirements and provide the underpinnings for healthy development of greater capacity to meet the needs of air commerce for the foreseeable future. NBAA therefore recommends the full implementation of the National Airspace System Plan (NASP), with first priority to those programs, which will provide improvement in the margin of safety for operation in the nation's airspace. Next in priority should be those programs which will provide for the greatest incremental gain against the problems of delay and congestion in the airspace and at the nation's airports. Finally, programs which provide for efficiency and cost savings in the operation of the air traffic control system should be completed in the most timely manner. Those programs for enhanced facilities and equipment which we believe have safety implications are described below.

FACILITIES AND EQUIPMENT

Data Link Communications.—Investigations of every major fatal aircraft accident exhibit deficiencies in air/ground communications. As traffic densities grow, the inherent limitations of "party-line" voice communications currently in use are increasingly exposed as a safety-related problem of significant scope. At the same time, increasing traffic density in the airspace near major terminals demands that all aircraft be equipped with altitude-reporting transponders. The FAA's dogged and glacial pursuit of Mode 'S' data link is seriously out of step with essential safety advances. Thus, we are convinced that a new NASP program should be undertaken to standardize and provide infrastructure to support state-of-the-art data link systems.

Flight Service Station (FSS) Modernization.—Although many business aircraft operators now bypass the FSS as a source for weather briefings and flight planning and purchase those services through commercial outlets, they still must use an FSS to obtain certain services while in-flight and to file flight plans. Additionally, FAA is currently closing FSSs around the country before providing automated stations. The FSS modernization program needs serious management attention, and needs to be redirected in a manner which will permit the customer to take full advantage of commerical services which help do the job with computers. The modernization program certainly should embrace the most modern means for filing flight plans—direct access through user operated computers.

NEXRAD and Terminal Doppler Radar.—Severe weather has always been a factor in many aviation accidents. Improvements in the network of weather observation locations and improvements in near real-time weather dissemination to flight crews should be integrated with the clearly understood goal of reducing the number of weather related accidents. New radars such as NEXRAD and the terminal Doppler program show great promise in addressing the threat to aviation safety posed by windshear. However, as the NTSB's report on the tragic crash of an L–1011 at Dallas/Fort Worth indicates, all the weather data available to those on the ground is of little value if it is not communicated to flightcrews in real-time.

Automated Weather Observation System (AWOS).—An urgent, safety-related but unfulfilled need exists for automated observation and transmission of local barometric pressure and wind velocity data at airports not served by control towers, or during periods when towers are unmanned. Present programs address the development of fully automated weather observation systems which will serve only to substitute for manual observation at airports with towers. Unfortunately, the cost of developing such systems far outstrips the available resources and the requirements for the simple, low cost current technology systems have been obscured by the pursuit of the most exotic system. Again, when considering that most aviation accidents are weather-related, restricting the installation of AWOS equipment to only those airports which currently have manual observation capabilities is short-sighted at best. At most, it completely overlooks the need to have more and better quality weather information in the hands of those who need it most—the pilots.

Microwave Landing System (MLS).—MLS is significantly behind schedule, but more to the point, woefully behind users' expectations. The program needs serious redirection, including the immediate installation of some numbers of ILS systems to fill the gap in stately progress, such progress having been seriously damaged by system development delays already encountered. Further to the point, implementation should be tailored to provide the maximum gain in aeronautical safety and capability. Airspace users generally agree that the installation of MLS on runways already served by ILS is a serious misuse of valuable assets and provides no gain against serious aeronautical needs. Regrettably, since 1984 no real gains in numbers of precision approaches have been realized as a result of the FAA's policy to postpone in order to install only MLS equipment where additional precision approaches are called for. This has resulted in a huge number of airports not receiving needed upgrades in their approach capability and consequent degradations of safety.

Programs designed to address delay and congestion on the airport and in the airspace are also important if safety is to be improved. Relevant programs are described below.

Host Computer.—Much of the delay in the en route air traffic system results from control techniques which keep aircraft from one another by separating them with huge blocks of airspace. Modern hardware is essential to development of air traffic control which will provide optimum separation of aircraft and provide for the most efficient use of the available airspace. Old antiquated hardware that supports the Air Traffic Control system must be modernized. NBAA strongly supports the prompt implementation of modernization, and the Host Computer is an essential building block toward such a goal.

Reduced Longitudinal Separation of Simultaneous Parallel Approaches.—By allowing the conduct of simultaneous approaches to parallel runways more closely spaced than current procedures allow, a quantum leap in capacity would be realized at some important locations. In order to achieve this, new sensors must be procured since current FAA radars are not accurate enough to ensure maintenance of proper separation. An extensive development program is not necessary, but off-the-shelf hardware should be selected and bought.

Traffic Management and Flow Control.—New methods of managing traffic have been studied by FAA air traffic control personnel, but absent a specific brown book program, computers and software are difficult to come by. Provisions should be made in the NASP for short term innovative solutions to persistent problems in traffic management.

AIRPORT PROGRAMS

Congestion, delays and, above all, safety of flight, begins and end at an airport. Thus, the overwhelming need for more and better-equipped airports must not be overlooked.

Airport Funding.—Airport funding through the Airport Improvement Program (AIP) must be increased to meet traditional needs and to expand capacity at constrained airports. Increasingly, commercial and non-commercial operators alike are finding that the finite limits to airports severely limit growth which can be otherwise accommodated in the airspace. If modernization of air traffic control, surveillance and communications equipment is to realize the ultimate growth and safety potential projected, airport capacity must be increased by building new runways and airports in affected major metropolitan areas. As congestion grows, safety suffers.

Increases in AIP funding are, therefore, essential. The Administration has proposed a "business as usual" funding level of $1.017 billion for the first few years of the reauthorization. Additionally, an airport-optional system of defederalization and a state block-grant program, utilizing 22% of the AIP funds available in a given year, is proposed. Given the Administration is proposing that total program funding be reduced by an amount equivalent to the entitlement funds which would have otherwise been available to those airports which "opt out" of the program, the gains in capacity improvement which could be achieved will be negated if the Administration's position is enacted.

Funding Priorities—In reauthorizing the Airport Improvement Program emphasis must be placed on those projects which, upon completion, will have a readily identifiable and positive impact on safety and capacity. For too long, airport development funds have been used by airport sponsors for the construction of access roads, terminals, baggage handling facilities, beautification and the like. Millions of dollars have gone into such projects while safety- and capacity-related needs have either gone unmet or have been delayed. As various studies and indicators demonstrate, many more dollars are available for airport improvement from other sources than are available from the Federal government. Consequently, as airport capacity is a national problem and airport grant funds will be at a premium if the proposed program level is enacted, NBAA strongly urges that reauthorization emphasize capacity-related projects as the primary candidates for grant funds.

Distribution of Funds.—The "carry-over" of entitlement funds by large airports, which limits the availability of airport funds and encourages spending on projects unrelated to capacity improvement, must be ended. This quirk of the 1982 Act has worked to artifically limit funds for other projects at different airports, many of them safety or capacity related.

"Carry-over" occurs when an airport sponsor's inability to allocate one year's entitlement funds results in their being added to next year's. The effect is to "soak up" discretionary funds which could be used by other airports, thus limiting and, in some cases precluding, their participation in the AIP in a given fiscal year. In FY 1987 alone, this and other factors combined to limit discretionary funding to a paltry $34 million, which brings up the question of altering the existing formulae for distribution of funds.

Although proposals for an airport-optional defederalization program may lessen the impact of carry-overs, the very real requirements for increased capacity at all types of airports argues heavily in favor of their elimination by enactment of a "use it or lose" clause for entitlements. NBAA recommends a thorough review and assessment of the scheme of entitlements presently used in order to arrive at formulae which would give more flexibility in the distribution of funds to resolve congestion and safety problems.

CONCLUSION

Essentially, the NBAA believes efforts to improve aviation safety should concentrate on the upcoming process of reauthorizing the 1982 Act. Surely, there is no simple solution to improving aviation safety. However, working together with this Subcommitte, all involved in aviation can make substantial contributions to a problem which does not lend itself to solutions by press release. We pledge to you our time and energies as you set about to meet this challenge.

Thank you for allowing NBAA to submit this statement. We would be pleased to respond to any questions or requests for additional detail you may have.

SCHEDULED COMMERCIAL AIR CARRIER ACCIDENT STATISTICS, 1982–86

Year	Accidents—		Fatalities [1]	Aircraft hours flown [1]	Accident rates—	
	Total	Fatal			Total	Fatal
1982	14	3	233	6,440,163	0.217	0.047
1983	23	4	15	6,649,009	.346	.060
1984	14	1	4	7,438,497	.188	.013
1985	18	4	197	7,934,135	.227	.050
1986 [2]	22	1	3	8,941,000	.246	.011
Average					.2449	.0363

[1] Includes air carrier fatalities when in collision with GA aircraft.

[2] Preliminary data.

Source: NTSB.

BUSINESS AND CORPORATE AVIATION ACCIDENT STATISTICS, 1982–86

Year	Accidents—		Fatalities [1]	Aircraft hours flown [2]	Rates per 100,000 hours—	
	Total	Fatal			Total	Fatal
Business:						
1982	318	72	150	7,980,000	3.985	0.902
1983	303	59	133	7,220,000	4.197	.817
1984	263	75	151	6,050,000	4.347	1.240
1985	257	58	116	6,533,000	3.934	.888
1986	183	55	122	6,480,000	2.824	.849
Average					3.8573	0.9391
Corporate:						
1982	44	13	42	6,080,000	0.724	0.214
1983	26	3	12	5,180,000	.502	.058
1984	13	2	5	5,230,000	.249	.038
1985	37	13	34	4,175,000	.886	.311

BUSINESS AND CORPORATE AVIATION ACCIDENT STATISTICS, 1982–86—Continued

Year	Accidents— Total	Fatal	Fatalities [1]	Aircraft hours flown [2]	Rates per 100,000 hours— Total	Fatal
1986	19	5	18	4,150,000	.458	.120
Average					.5636	.1483

[1] NTSB figures.

[2] FAA figures.

Note.—All data for 1986 are preliminary.

STATEMENT OF THE COALITION ON SMOKING OR HEALTH

The Coalition on Smoking OR Health, consisting of the American Cancer Society, the American Health Association and the American Lung Association, was created in 1982 to more effectively bring smoking and health issues to the attention of Federal legislators and other public officials. These three voluntary health organizations are among the olderst and largest organizations of citizen volunteers. Together, they have a membership of approximately five million around the country. We appreciate the opportunity to submit this statement for the hearing record of the Subcommittee's aviation safety hearings.

The aspect of aviation safety that is of special concern to the Coalition on Smoking OR Health is the hazard posed to non-smoking passengers and crew by the presence to tobacco smoke in the airplane passenger cabin. The health effects of the passive inhalation of airborne tobacco smoke by nonsmokes, known as involuntary smoking, is the subject of two recent scientific reports issued in November and December, 1986. In these reports, the National Research council of the National Academy of Sciences and the Surgeon General of the U.S. Public Health Service, conclude that:

(1) Involuntary smoking is a cause of disease, including lung cancer, in healthy nonsmokers.

(2) Involuntary smoking by infants and children results in an increased frequency of respiratory infections such as bronchitis and pneumonia, increased respiratory symptoms and smaller rates of increase in lung function as the lung matures.

(3) Healthy nonsmokers exposed to airborne tobacco smoke experience acute physical reactions including eye, nose and throat irritation, and for especially sensitive individuals these and other acute reactions may be severe.

(4) The simple separation of smokers and nonsmokers in the same airspace does not eliminate the nonsmokers' exposure to airborne tobacco smoke.

(5) There is no known threshold below which exposure to tobacco smoke is without risk.

The findings of these reports further buttress the conclusions of the August, 1986 report made pursuant to P.L. 98–466 by the Committee on Cabin Air Quality of the National Research Council, entitled "The Airliner Cabin Environment: Air Quality and Safety." Among other contaminants, this Committee identified airborne tobacco smoke as a major health and safety hazard for both passengers and crew. The Committee found that "tobacco smoke in the air of airplanes is a hazardous substance and is the most frequent source of complaint about aircraft air quality." The Committee added:

"Although the adverse effects of ETS are still under investigation, the Committee feels that this potential threat to the health of non-smoking passengers and flight attendants should not be ignored, especially because flight attendants on some airlines can fly up to the twenty-eight week of pregnancy."

The Committee concluded:

"The Committee recommends a ban on smoking on all domestic commercial flights for four major reasons: to lessen irritation and discomfort to passengers and crew; to reduce potential health hazards to cabin crew assoicated with EST; to eliminate the possibility of fires caused by cigarettes aboard aircraft and to bring cabin air quality into line with established standards for other closed environments."

In light of the medical evidence we now have which shows that the exposure of nonsmokers to other people's tobacco smoke poses definite health risks to the nonsmoker, the Committee's recommendation that smoking be banned on all domestic commercial airline flights is both timely and appropriate. A total ban on smoking aboard aircraft is the only feasible solution to protecting the health of nonsmokers and cabin crew aboard aircraft. The Committee on Airliner Cabin Air Quality reviewed, in detail, environmental control systems on commercial aircraft and concluded that "solutions requiring structural or engineering changes—such as increasing ventilation, moving lavatories and galleys and separating smoking comparments by physical barries—are not likely to be economically feasible."

The Committee found that the concentrations of airborne tobacco smoke in airplane passenger cabins are higher than those normally occuring in other public places where smoking is permitted, and that given the low relative humidity and other environmental conditions of the passenger cabin, such as high ozone concentrations the actue effects of involuntary smoking by passengers and crew are likely to be significant. The long-term health risks to the flight crew, whose exposure to environmental tobacco smoke in the passenger cabin is estimated to be equal to that of living with a pack-a-day smoker, are considered by the Committee to be equivalent to those of nonsmoking spouses married to smokers. Studies of non-smoking wives married to smokers have found an increased risk for lung cancer in the nonsmoking spouse.

In addition to the health risks associated with nonsmoker's exposure to airborne tobacco smoke, the airline industry itself could benefit from a ban on smoking aboard airlines. The Committee stated that "after a period of adjustment and with strict enforcement, prohibiting smoking should reduce onboard fire risk, cleaning costs and costs of replacing damaged mnaterials. Removing tobacco smoke from the aircraft environment would reduce cabin ventilation requirements and that would result in additional fuel savings while reducing irritation and health risks." Last summer, Air Canada instituted non-smoking flights on many of its most popular commuter routes. The response from the public, airplace crew and travel industry was so positive that Air Canada has expanded these non-smoking flights to additional routes.

The Coalition on Smoking OR Health strongly endorses the Committee on Airliner Cabin Air Quality's recommended ban on smoking aboard all commercial domestic airline flights and we have urged it swift adoption by Secretary of Transportation Elizabeth Dole. The health and safety of nonsmoking passengers and crew are jeopardized by the presence of tobacco smoke in the airplane passenger cabin. We urge the Subcommittee to take the steps necessary to eliminate this threat to those who work on travel on our nation's airlines.

Association of Sleep Disorders Centers,
Washington, DC, January 28, 1987.

Hon. Wendell H. Ford,
Chairman, Aviation Subcommittee, Committee on Commerce, Science, and Transportation, U.S. Senate, Hart Office Building, Washington, DC.

Dear Senator Ford: The Association of Sleep Disorders Centers commends you for holding hearings on aviation safety. Since approximately 25 million Americans suffer from sleep apnea and narcolepsy, we believe that situations in which a pilot suffers from a sleep disorder should be considered an important safety issue and receive the attention necessary to prevent catastrophes.

A December, 1986 article in the Washington Post discusses a study that had been conducted for an airline. It states that "In one incident, an airliner on a transcontinental flight to Los Angeles flew past its destination because everyone in the cockpit was asleep." The crew did not awake until the plane was 100 miles out over the Pacific Ocean. In another instance, an "airliner . . . drifted into Canadian airspace while the pilots slept. Interceptors were sent up to investigate."

It has been calculated that 20,000 to 30,000 patients seek treatment each year for symptoms that place them at risk of falling asleep while at the wheel. The U.S. Senate, in its report #99-152 accompanying the fiscal year 1986 Appropriations Bill for the Department of Transportation, has recognized the potential impact these disorders have on highway safety. The Association of Sleep Disorders Centers believes that the potential impact on aviation safety is also critical, and we urge you and the other Members of the Subcommittee to consider sleep disorders in your attempts to improve the safety of airline passengers and their crews. The most important point we want to make is that most of these disorders are medically treatable. Many individuals who suffer sleep disorders can be clinically helped, and return to a normal, healthy sleeping pattern, thus making their waking hours much safer.

We would appreciate you including our remarks in the record of your Subcommittee's proceedings. Attached, for your information, is a copy of the article that appeared in the Washington Post.

Sincerely,

Merrill M. Mitler, Ph.D,
Chairman, Government Relations Committee.

February 17, 1987.

Hon. **Ernest F. Hollings**,
Chairman, Committee on Commerce, Science, and Transportation, U.S. Senate, Washington, DC.

Dear Mr. Chairman: To help assure that our national air transportation system continues to be the safest in the world, Congress in recent years has provided expenditures for important safety projects and improvements.

Most recently, Congress demonstrated its ongoing commitment for measures aimed at reducing the risk of mid-air collisions by including provisions in the 1987 Omnibus Continuing Resolution that directed the FAA to initiate rulemaking concerning automatic altitude reporting equipment, and directed the FAA to modify the present collision avoidance system development program so that TCAS III can be fully tested, evaluated and certified. We commend you and other members of Congress for your leadership in addressing this important safety need.

Because of your obvious interest in collision avoidance and recent mid-air incidents, we urge you to do all possible to see that the FAA expedites action and provides you with periodic progress reports for completing steps necessary to:

Expand regulatory requirements for automatic altitude reporting to include all general aviation aircraft that share terminal and en route airspace with airline aircraft. These requirements should be effective within Airport Radar Service Areas and Terminal Radar Service Areas as well as Terminal Control Areas. This capability is required to enable the Air Traffic Control system to most efficiently separate aircraft and to permit the backup separation system, TCAS, to function effectively. A deadline for completion of FAA regulatory action should be established—December 31, 1987.

Complete the operational validation of TCAS II, including the miss distance filtering modification, a vital final step to assure integrity of the system design.

Permit parallel development of final TCAS III technical specifications followed by operational validation of the enhanced TCAS III capability.

Implement Terminal Control Area (TCA) improvements to simplify and standarize configuration and pilot procedures, thereby reducing opportunity for error.

Aside from these specific FAA initiatives related to collision avoidance, we think it is timely to reemphasize the importance of a related component of the National Airspace System (NAS) modernization plan. As you know, one of the key elements of the NAS Plan is the Advanced Automation System (AAS). The Advanced Automation System includes hardware and software changes required to realize safety improvements as well as capacity enhancements. For example, conflict alert and automated conflict resolution functions for VFR "intruder aircraft" will not be available to terminal controllers until new "sector suites"—control consoles—become available. Nor will it be possible to significantly improve the display of severe weather warning information without the new sector suite and related automation equipment.

The AAS program must be accelerated to permit the earliest possible implementation of advanced safety technology. We hope you will direct the FAA to get the revised acquisition plan to you as soon as possible and that you will release the $75 million in AAS funds now being held in reserve.

We will address NAS Plan issues in detail during forthcoming hearings on the Administration's budget request for FAA. In the meantime, your continuing support for efforts to expedite safety and capacity improvements coincident with modernization of the ATC system is vital. Air traffic personnel must have the best automation aids and most reliable equipment available to do their job, just as aircraft must be properly equipped to minimize collision risk.

Sincerely,

Henry A. Duffy, President,
Air Line Pilots Association.
William F. Bolger, President,
Air Transport Association.

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